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Credit Constraints, Cyclical Fiscal Policy and Industry Growth*

Philippe Aghion, David Hemous, Enisse Kharroubi

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Abstract

This paper evaluates whether the cyclical pattern of fiscal policy can affect growth. We first build a simple endogenous growth model where entrepreneurs can invest either in short-run projects or in long-term growth enhancing projects. Long-term projects involve a liquidity risk which credit constrained firms try to overcome by borrowing on the basis of their short-run profits. By increasing firms' market size in recessions, a countercyclical fiscal policy will boost investment in productivity-enhancing long-term projects, and the more so in sectors that rely more on external financing or which display lower asset tangibility. Second, the paper tests this prediction using Rajan and Zingales (1998)'s diff-and-diff methodology on a panel data sample of manufacturing industries across 17 OECD countries over the period 1980-2005. The evidence confirms that the positive effects of a more countercyclical fiscal policy on value added growth, productivity growth, and R&D expenditure, are indeed larger in industries with heavier reliance on external finance or lower asset tangibility.

Keywords: growth, financial dependence, fiscal policy, counter-cyclical

JEL Classification: E32, E62

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1 Introduction

Standard macroeconomic textbooks are generally divided into two largely separate parts: the analysis of long-run growth, which at best is linked to structural characteristics of the economy (education, R&D, openness to trade, financial development); and the short term analysis, which emphasizes the short-term effects of productivity or demand shocks and the effects of macroeconomic policies (fiscal and/or monetary) aimed at stabilizing the economy. Yet, recently the view that short-run stabilization policies should have no significant impact on long run growth, has been challenged by several empirical papers, notably Ramey and Ramey (1995) who find a negative correlation in cross-country regression between volatility and long-run growth.¹ More recently, using a Schumpeterian growth framework, Aghion, Angeletos, Banerjee and Manova (2008) (henceforth AABM) have argued that higher macroeconomic volatility affects the composition of firms' investments and in particular pushes towards more pro-cyclical R&D investments in firms that are more credit constrained.

This paper goes one step further by analyzing the effect of a more countercyclical fiscal policy on industry growth, depending upon the financial constraints faced by the industry². Our basic purpose is two fold. It is first to show that the link between volatility and growth is not only structural: macroeconomic policies that affects the former also affect the latter. Second, we want to argue that even if the impact of a countercyclical fiscal stimulus policy on aggregate GDP may be limited in the short-run, there may be economically significant gains from such a policy in terms of long-run growth.

Our analysis proceeds in two steps. First, we build a simple model to illustrate how the cyclical component of fiscal policy can affect growth in sectors that are more or less financially constrained. Second, we use cross industry/cross-country panel data to test our main theoretical predictions, and provide empirical evidence of a more positive and significant impact of stabilizing fiscal policy on industry growth in more financially constrained industries.

¹Additional evidence can be found in the work of Bruno (1993) on inflation and growth, of Hausman and Gavin (1996) for Latin American countries, or more recently Imbs (2007)

²Showing that a more countercyclical fiscal policy has a significantly positive effect on industry growth in more financially constrained industries, would also point to a welfare effect of such a policy that should go well beyond the welfare improvement pointed out by Lucas (1987): in his model with exogenous growth, the welfare gains from stabilization only, are welfare equivalent to a very modest increase in long-run growth.

In our model, fiscal policy impacts on long-run growth by affecting how much more investment is directed towards productivity enhancing activity. More specifically, as in AABM, firms choose to direct their investment either towards short-run projects that do not increase the stock of knowledge in the economy, or towards productivity enhancing long-term projects. The completion of long-term innovative projects is in turn subject to a liquidity risk: namely, such projects can only be implemented if the firm overcomes a liquidity shock that may occur during the interim period. Consequently, credit constrained firms may also choose to invest in the short-run project in order to generate cash-flow revenues which will subsequently help them overcome the liquidity shock. The aggregate business cycle interferes with firms' decision whether to invest more in long-term innovative projects, through a market size effect: namely, the market size for both long-term and short-term projects is lower during a recession than during a boom. Current market size does not affect the allocation of investment between long-run and short-run projects as much as expected future market size affects long-term investment.³ This, together with the assumption that a recession is more likely to occur tomorrow if it is already occurring today, implies: first, that firms will engage less in long-term productivity-enhancing investments during recessions than during booms; second, that a policy which commits to increase market-size by the time long-term projects are to be completed, induces firms to increase long-term investment. This effect is stronger the lower the market-size prior to government intervention and also the more credit-constrained firms are. Consequently, a countercyclical policy increases productivity growth, the higher the share of investment financed through external capital (which in the model is proxied by the size of the liquidity shock) and the lower asset tangibility.

In the second part of the paper we test the main prediction of the model, namely that a countercyclical fiscal policy increases productivity growth, the higher the share of investment financed through external capital (which in the model is proxied by the size of the liquidity shock) and the lower asset tangibility.

A simple approach to assessing the impact of countercyclical economic policies on growth, would be to regress growth outcomes (e.g. output or labour productivity growth) on some indicator which reflects

³A higher market size today, has two counteracting effects on investment composition. On the one hand it encourages higher short-term investment since these will yield higher short-run profits. On the other hand, it encourages higher long term investment since the higher cash-flow induced by the increased market size in the short run, will also help credit-constrained firms overcome interim liquidity shocks and thereby complete their long term projects.

the degree of countercyclicality of fiscal policy and the interaction between this indicator and a measure of credit constraints. Everything else remaining equal, such an approach should tell us for example about how much extra growth can be expected from moving say from a more to a less procyclical fiscal policy. However, there are at least three important issues that preclude a proper interpretation of this type of straightforward exercise. First, the cyclicity of (fiscal) policy is typically captured by a unique time-invariant parameter which only varies across countries. As a result, standard cross-country panel regression cannot be used to assess to the effect of the cyclical pattern of fiscal policy on growth in as much as the former is perfectly collinear to the fixed effect that is traditionally introduced to control for unobserved cross-country heterogeneity.⁴ Second, the causality issue -does a positive correlation between fiscal policy countercyclicality and growth reflect the effect of fiscal policy cyclicity on growth or the effect of growth on the cyclical pattern of fiscal policy- cannot be properly addressed while maintaining the analysis at a pure macroeconomic level.⁵ But then, how can we use the results from the regression analysis to estimate the growth gain/loss from a change in the cyclical pattern of fiscal policy and then draw policy implications?⁶ A final concern is identification: a cross-country panel regression, particularly one which is restricted to a small cross-country sample, is unlikely to be robust to the inclusion of additional control variables reflecting alternative stories. Thus, even if cross-country panel regressions may point at correlations between the cyclical pattern of fiscal policy and growth, the channel through which this correlation works is not likely to be well identified by a pure country level analysis.

The approach we follow in this paper allows us to address each of the above issues. More specifically, we follow the methodology developed in the seminal paper by Rajan and Zingales (1998) and use cross-industry/cross-country panel data on a sample of 17 OECD countries over the overall period 1980-2005, to test whether industry growth is positively affected by the interaction between fiscal policy cyclicity (which

⁴To solve this issue, Aghion and Marinescu (2007) introduce time-varying estimates of fiscal policy cyclicity. While this helps controlling for unobserved heterogeneity, it comes at the cost of losing precision in the estimates of fiscal policy cyclicity.

⁵One particular reason for this, is that fiscal policy cyclicity is used in growth regressions as a right hand side variable meanwhile the estimation of time-varying fiscal policy cyclicity requires using the full data sample. See Aghion and Marinescu (2007).

⁶One answer to this problem would be to use instrumental variables. However cross-country panel IV regressions typically use internal instruments, i.e. lagged values of right hand side variables. In the case of time-varying estimates of fiscal policy cyclicity, this boils down to using forward information as instruments, in which case instruments cannot be exogenous.

is computed at country level for all countries in the sample) and industry level external financial dependence or asset tangibility (which are computed for each corresponding industry in the US). That this approach helps us overcome the three issues stated above, follows from the following considerations: first, even though we estimate the countercyclicality of fiscal policy at country level by a time-invariant coefficient (which we derive for each country by regressing various indicators of fiscal policy on the output gap in this country over a given time period), and therefore fiscal policy countercyclicality in each country is collinear to that country's fixed effect, the interaction between the country level measure of countercyclicality and the industry level variable is not. Second, the interaction term helps solve the identification issue to the extent that by working at cross-industry level we have enough observations that our results withstand the introduction of country fixed effects plus a whole set of structural variables as additional controls. Finally, this approach helps us deal with the causality issue: in particular, to the extent that macroeconomic policy should affect industry level growth whereas the opposite - industry level growth affecting macroeconomic policy- is less likely to hold, finding a positive and significant interaction coefficient in the growth regressions, is informative as to whether the cyclical pattern of fiscal policy indeed has a causal impact on growth.⁷ However, there is a downside to the industry level investigation: namely, our difference in difference analysis has little to say about the magnitude of the macroeconomic growth gain/loss induced by different patterns of cyclicity in fiscal policy. At best, our empirical estimates provide qualitative evidence of the growth effect of countercyclical fiscal policy.⁸

Our empirical results can be summarized as follows. First, fiscal policy countercyclicality - measured as the sensitivity of a country's total or primary fiscal balance (relative to GDP) to time variations in its output gap - has a positive significant and robust impact on industry growth, the higher the extent to which the corresponding industry in the US relies on external finance, or the lower asset tangibility of

⁷Fiscal policy cyclicity could be endogenous to the industry level composition of total output if for example industries that benefit more from fiscal policy counter-cyclicity do lobby more for counter-cyclical fiscal policy. However, to the extent that there are decreasing returns to scale (which is likely to be the case in the manufacturing industries featuring in our empirical analysis), this would rather imply a downward bias in our estimates of the positive impact of fiscal policy counter-cyclicity on growth. Hence controlling for this possible source of endogeneity would only reinforce our conclusions by reducing this downward bias.

⁸Extrapolating from our results to derive more aggregate numerical conclusions, is further complicated by our focusing on the growth for manufacturing industries while the total share of manufacturing industries in total value added is about 40% not more. In particular, assessing the global macroeconomic effect of fiscal policy cyclicity would require an assessment of the impact on the service sector.

the corresponding sector in the US. This result obtains whether growth is measured by real value added growth or by labour productivity growth. Using the regression coefficients one can assess the magnitude of the corresponding diff-in-diff effect: that is, how much extra growth do we generate when say fiscal policy countercyclicality and external financial dependence move from the 25% to the 75% percentile. The figures happen to be relatively large, especially when compared to the equivalent figures in Rajan and Zingales (1998). This in turn suggests that the effect of a more countercyclical fiscal policy in more financially constrained industries, is economically significant. Second, we show that our baseline result is robust to: (i) distinguishing between industries with positive financial dependence and industries with negative financial dependence; (ii) removing particular countries from the regression exercise; (iii) adding control variables such as financial development, inflation, and average fiscal balance interacted with the industry level variables (external financial dependence or asset tangibility); (iv) instrumenting fiscal policy cyclicality with economic, legal and political variables. Third, we decompose fiscal policy between its revenue side and its expenditure sides. We then obtain two somewhat surprising results: first, countercyclicality in total government revenues has approximately the same effect as countercyclicality in total government expenditures. Second, when focusing on primary government expenditures and revenues, the empirical evidence shows that the effect of countercyclicality in primary government expenditures (interacted with industry financial dependence or asset tangibility), is about twice as large as the impact of countercyclicality in primary government revenues.

9

Our analysis contributes to at least three ongoing debates among macroeconomists: 1) is there a (causal) link between volatility and growth?; 2) what is the optimal design of intertemporal fiscal policy? 3) what are the effects of a countercyclical fiscal stimulus on aggregate output? That the correlation between long-run growth and volatility is not entirely causal, is stressed by Acemoglu and Zilibotti (1997) who point to low financial development as a factor that could both, reduce long-run growth and increase the volatility of the economy. More recently, Acemoglu, Johnson, Robinson and Thaicharoen (2003) and Easterly (2005) hold that both, high volatility and low long-run growth do not directly arise from policy decisions but rather

⁹As it turns out, over the most recent period, countercyclicality in government revenues appears to have had little effect on industry real value added and labour productivity growth.

from bad institutions. However, fiscal policy cyclicalities vary a lot even among OECD countries (Lane (2003)) which share similar institutions. Thus, the finding of significant correlations between growth and countercyclical fiscal policy in a sample of OECD countries may say something after all as to the growth effect of cyclical fiscal policy, over and above the effect of more structural variables. As mentioned above, AABM defend the view that higher volatility should induce lower growth by discouraging long-term growth-enhancing investment particularly in more credit constrained firms. Aghion, Bacchetta, Ranciere and Rogoff (2006) build on that insight when analyzing the relationship between long-run growth and the choice of exchange-rate regime.¹⁰

The case for a countercyclical fiscal policy was most forcefully made by Barro (1979): a countercyclical fiscal policy helps smooth out intertemporal consumption when production is affected by exogenous shocks, thereby improving welfare. Another justification for countercyclical fiscal policy stems from a more Keynesian view of the cycle: namely, to the extent that a recession corresponds to an increase in the inefficiency of the economy, appropriate fiscal or monetary policy that raises aggregate demand can bring the economy closer to the efficient level of production (see Galí, Gertler, López-Salido (2007)).¹¹ The effect of fiscal policy in our model is different: fiscal policy affects growth through a market-size effect: e.g by increasing expenditures, the government can induce firms to devote more investment to long-term projects, as innovations will then pay out more.¹²

Finally, an extended literature looks at the - short-run - output response to an exogenous increase in government spending or to a tax cut. Importantly in these papers, GDP is usually detrended, so that all long-run effects are shut down. Although most economists would agree on the fact that a fiscal shock should increase short-run output, there is no consensus on the magnitude of the effect.¹³ In particular, papers

¹⁰See Aghion and Banerjee (2005) and Aghion and Howitt (2009, ch14) for more complete literature reviews on the link between volatility and long-run growth.

¹¹Consequently, government purchases needs to remain above the level implied by the optimal provision of public good, as their role is dual: providing a public good, and increasing the efficiency in the economy (Galí J. (2005)).

¹²In Barro (1990)'s AK model however, growth decreases with utility-type expenditures and it increases only initially with productive government expenditures. Let us also mention political economy explanations for why fiscal policy often fails to be countercyclical (for instance Alesina, Campante, and Tabellini (2008))

¹³Skeptical views on the importance of the effect of fiscal shocks include Mountford and Uhlig (2008) who defend tax cuts over government spending increases, or Perotti (2005) who shows, based on a sample of 5 OECD countries, that government spending multipliers larger than 1 can be seen only in the US pre-1980 period, but who does not find that tax cuts works better than government spending increases. On the other hand, Fatas and Mihov (2001b) find that an increase in government spending (especially government wage expenditures increase) induces increases in consumption and employment. All the above

that introduce rational expectations and long-run wealth effects, will typically predict a lower value of the multiplier (based on the idea that consumers anticipate that an increase in government spending today is likely to result in an increase in taxes tomorrow).¹⁴ We move beyond this debate by looking only at the long-run effect of a more countercyclical fiscal policy: even if the short-run effect of a more countercyclical policy was more in line with the prediction of low multipliers, our results point to economically significant long-run effect.

The remaining part of the paper is organized as follows. Section 2 develops the theoretical model and derives the main predictions to be subsequently tested. Section 3 details the econometric methodology and presents the data sources used in our estimations. Section 4 presents our baseline results. Section 5 presents the robustness checks, in particular whether the growth impact of countercyclical fiscal policy is robust to the inclusions of additional structural characteristics. Section 6 looks at the composition of fiscal policy into its expenditure and revenue components. Finally Section 7 concludes.

2 Cyclical fiscal policy and growth: a toy model

2.1 Basic setup

The environment The model builds on Aghion, Angeletos, Banerjee and Manova (2008), henceforth AABM. We consider a discrete time model of an economy populated by a continuum of two-periods lived entrepreneurs (firms). Each firm starts out with a positive amount of wealth $W = wT$, where T denotes the accumulated knowledge at the beginning of the current period, and w denotes the firm's knowledge

mentioned papers use VAR analysis, Blanchard and Perotti (2002), uses a mixed VAR - event study approach to show that both, increases in government spending and tax cuts have a positive effect on GDP; they also find - like Alesina, Ardagna, Perotti and Schiantarelli (2002) - that fiscal policy shocks have a negative effect on investment; note that this does not contradict our theory which points at investments being directed towards more productivity enhancing projects as the channel whereby long-run growth is enhanced by a more countercyclical fiscal policy.

Somewhat closer to the analysis in this paper, Tagkalakis and Athanasios (2008) shows on a panel of 19 OECD countries from 1970 to 2002 that the effects of fiscal policy changes on private consumption is higher in recessions than in expansions. Interestingly, they explain this phenomenon by the presence of more liquidity constrained consumers in recessions, and show that the effect is more pronounced in countries characterized by less developed consumer credit markets.

¹⁴For example Cogan, Cwik, Taylor and Wieland (2009) use the Smets-Wouters (2007) model and compute the effect of a permanent increase by 1% of GDP of government expenditures as of 2009: by 2011 Q4, they find that the increase in GDP is only equal to 0.44%, whereas Romer and Bernstein (2009) find a 1.57% increase. Finally, based on narrative records (political speeches, Congressional reports, ...) Romer and Romer (2007) find that - exogenous - tax increases are highly contractionary.

adjusted wealth. Initial wealth can be invested in two different projects: a short term investment project that generates output in the current period and a long term innovation project which, when successful, generates production with higher productivity next period. The short term investment project may involve maintaining existing equipment, or expanding a business using the same kind of technology and equipment, or increasing marketing expenses. The long term project may consist in learning a new skill, learning about a new technology, or investing in R&D. Investing in the long term project increases the stock of knowledge available in the economy next period, whereas investing in the short term project does not contribute to knowledge growth.

Both, short term and long term profits are proportional to market demand (see Acemoglu and Linn (2006)). More specifically, by investing capital $K = kT$ in the short term project, where k denotes the knowledge adjusted short-run capital investment, a firm generates short-run profits

$$\Pi_1(K, P_j) = T\pi_1(k, P_j),$$

where

$$\pi_1(k, P_j) = P_j k$$

is the knowledge-adjusted short-run profit, P_j is proportional to the private component of demand, and j denotes the aggregate state of the economy. The realization of state $j \in \{L, H\}$ capture an aggregate trade (or market size) shock P , which can take two value $P_H > P_L$ and follows a Markovian process with probability p of remaining in the same state in the next period. As is often done in the literature on real business cycles, we assume that $p > 1/2$, i.e that the aggregate shock on P displays some positive degree of persistence over time.

Now, consider firms' long term investments. As in AABM, we shall assume that after the R&D investment $Z = zT$ has been incurred, where z denotes the knowledge-adjusted long-term innovative investment, the firm faces an idiosyncratic liquidity shock $C = cT$, where c is uniformly distributed on the interval $[0, \bar{c}]$. Only those firms that are able to raise enough money to pay their liquidity cost, will be able to produce in

the second period.

Given that all firms start out with same initial wealth $W = wT$, there is no borrowing and lending in equilibrium at the beginning of a period. However, once the idiosyncratic liquidity shocks are realized, firms with low liquidity shocks will typically lend to firms facing higher liquidity shocks.¹⁵

As in AABM, we assume that due to ex post moral hazard considerations¹⁶ firms cannot borrow more than $\mu - 1$ times their current cash flow in order to overcome the liquidity shock. We can interpret μ as a proxy for the tangibility of the firm's assets: more tangible assets are typically associated with lower monitoring costs for potential creditors, and therefore to a higher value of the credit multiplier μ ¹⁷. The parameter \bar{c} reflects for example the extent to which the firm depends upon external finance: the higher \bar{c} , the less likely it is that the firm will be able to cover its liquidity shock using only its retained earnings $T\pi_1(k, P_j)$. In fact, given the uniformity of the distribution of liquidity costs, long-term investments will survive the liquidity shock with probability

$$\delta(P, k) = \Pr(cT \leq \mu T\pi_1(k, P_j)) = \min\left(\frac{\mu Pk}{\bar{c}}, 1\right),$$

which is increasing in μ and decreasing in \bar{c} .

A firm that has invested $Z = zT$ in the long term project and then manages to overcome its liquidity shock¹⁸, will innovate with probability λz and then earn ex post profits

$$T(E(P_h|j) + g_j),$$

where $E(P_h|j)$ is the expected (private) market size next period, conditional upon the economy being in state j today, and g_j denotes the volume of government expenditures tomorrow if the economy is in state j

¹⁵Credit constraints prevent firms from achieving full insurance against these idiosyncratic liquidity shocks.

¹⁶See Aghion, Banerjee and Piketty (1999).

¹⁷Following Aghion, Banerjee and Piketty (1999) or AABM, we take μ to be constant over time. Alternative formulations, for example Holmstrom and Tirole (1995) based on ex ante moral hazard, would generate a credit multiplier which is negatively correlated with the interest rate, and therefore typically procyclical. A procyclical μ would only reinforce the optimality of countercyclical fiscal policy established later in this section.

¹⁸The model is built in order to illustrate the empirical results that the more externally financially dependent firms are the one that benefits the most from contracyclicality. Hence we want to abstract from other factors that will favor contracyclicality, which is why we use linear technologies.

today¹⁹. If innovation does not occur production tomorrow is competitive, therefore firms earn zero profit, yet g_j is still spent. We assume that entrepreneurs are risk-neutral and consume all their wealth in the second period of their life.

We assume that $\lambda(E(P_h|j)) > P_j$, so that absent credit constraints and binding liquidity shocks, entrepreneurs invest all their initial endowment in the long term project, no matter government expenditures g_j over the cycle.

Growth Knowledge growth results entirely from aggregate R&D intensity. If T_t denotes the knowledge stock at the beginning of period t , we thus assume²⁰

$$\frac{T_{t+1} - T_t}{T_t} = \int_0^1 z_t di = z_t.$$

Government policy Unlike private agents, the government has access to costless and unbounded access to international credit each period before the state of the world is revealed.²¹ Government's policy is determined each period before the current state j of nature is revealed, but can be dependent on the previous state of nature (denoted by x). Government policy therefore consists of a 4-uple $s_L^x, s_H^x, g_L^x, g_H^x$, where s_j^x denote the subsidies/tax that a firm must pay before initiating its investments, and g_j^x denotes the government expenditures next period, if the current state is j and the state last period was x . The timing of government intervention, can be described as follows: (i) at the beginning of each period, before the state of nature j for that period is realized, the government chooses its policy $(s_j^x, g_j^x)_{j=L,H}$ which depends upon the state of the world x at the end of last period; (ii) once the current state of nature $j = H, L$ is realized, the government implements the policy (s_j^x, g_j^x) .

¹⁹Our analysis encompasses the case where tomorrow's private revenue is proportional, not equal to the expected private market size $E(P_h|j)$. This just involves reinterpreting the multiplier β .

²⁰In AABM we consider a variant of this model where only successful innovators (those who overcome the liquidity shock) contribute to knowledge growth. Below we discuss how our results would be modified if we adopt this alternative specification.

²¹We shall assume that the government can credibly commit to a budget limit. This, in turn, is consistent with the assumption that the government can borrow more and at lower cost than private agents. Here, we also refer the reader to Homstrom and Tirole (1998) on private versus public provisions of liquidity.

Timing of events The overall timing of events within each period, is as follows: (i) the state of nature j is realized; (ii) firms make their investment decisions, given their correct anticipations about government policy (s_j^x, g_j^x) ; (iii) liquidity shocks are realized and firms lend to or borrow from one another; (iv) firms that can overcome their idiosyncratic liquidity shocks innovate and thereby generate a profit next period.

2.2 A firm's maximization problem

In this subsection we take government policy as given and analyze firms' optimal investment decisions. Given that firms are ex ante identical, there exists a symmetric equilibrium where all firms make the same investment decisions, and we concentrate attention on this particular equilibrium. For simplicity we take the discount factor between two periods to be equal to 1. Then, once the current state of nature j is realized, a representative firm in state j chooses knowledge-adjusted investments (k, z) to maximize the expected present value, that is current profits plus expected future revenues:

$$\begin{aligned} \max \quad & \left\{ P_j k + \lambda z \min \left(\frac{\mu P_j k}{\bar{c}}, 1 \right) E_{h|j} (P_h + g_j^x) \right\} \\ \text{subject to} \quad & k + z \leq w + s_j^x. \end{aligned}$$

One can first establish:

Lemma 1 *If there is always a positive probability of unsuccessful innovation, the manager chooses $z_j = \max(\frac{1}{2} \left(w + s_j^x - \frac{\bar{c}}{\mu \lambda \beta \gamma (E_{h|j}(P_h) + g_j^x)} \right), 0)$.*

In particular when

$$z_j = \frac{1}{2} \left(w + s_j^x - \frac{\bar{c}}{\mu \lambda (E_{h|j}(P_h) + g_j^x)} \right) > 0,$$

then government taxes/subsidies s_j^x do not affect the difference between the long term innovative investment z and the short term capital investment k : a higher s increases the amount of cash available for firms to invest, however it does not affect the relative profitability of long versus short term investments. Increasing g_j^x will instead affect the market size for successful innovators tomorrow and therefore the relative profitability

of long term innovative investment compared to short run capital investment.

Remark 1 *The fact that government expenditures are targeted towards long term projects is not the driving force behind this last conclusion. To see this, suppose instead that government expenditures decided at $t - 1$, also affect the market for short term projects at t . This has two effects on firms born in period t : on the one hand, investing in short term projects becomes more attractive because market size is increased in the short run; on the other hand, firms now have more cash in hand to overcome the potential liquidity shock. As long as we are in an interior solution case (with $z > 0$ and $\frac{\mu\beta(P_j+g_x)k}{\bar{c}} < 1$) these two forces turn out to exactly offset each other.²²*

Remark 2 *Whether profits of short term investments are linear in k (as it is the case here) or proportional to k^α (as it is the case in AABM) does not affect our results: in the latter case, we would then get $z_j = \frac{1}{1+\alpha} \left(w + s_j^x - \frac{\alpha\bar{c}}{\mu\lambda\beta\gamma(E_{h|j}(P_h)+g_j^x)} \right) -$*

2.3 Growth effect of increasing the countercyclicality of government spending

The main conjecture we consider in the empirical part of the paper, is that a more countercyclical fiscal policy, and particularly more countercyclical government expenditures, are more growth-enhancing in sectors that are more dependent on external finance or in sectors with more intangible capital. Here, we show how our toy model generates this prediction.

More formally, consider the case where in both states of the world $z_j = \frac{1}{2} \left(w + s_j^x - \frac{\bar{c}}{\mu\lambda(E_{h|j}(P_h)+g_j^x)} \right)$.

²² Indeed the representative firms then choose k, z such that

$$\begin{aligned} & \max \left\{ \beta (P_j + g_x) k + \lambda z \min \left(\frac{\mu\beta (P_j + g_x) k}{\bar{c}}, 1 \right) E_{h|j} (\beta (P_h + g_j^x)) \right\} \\ \Leftrightarrow & \max \left\{ \beta k + \lambda z \left(\frac{\mu\beta k}{\bar{c}} \right) E_{h|j} (\beta (P_h + g_j^x)) \right\} \\ \text{subject to} & \quad k + z \leq w + s_j^x \end{aligned}$$

so the interior solution is still given by

$$z_j = \frac{1}{2} \left(w + s_j^x - \frac{\bar{c}}{\mu\lambda\beta (E_{h|j} (P_h) + g_j^x)} \right)$$

Then, the expected growth rate is simply equal to

$$E(z|x) = pz_x + (1-p)z_{-x}$$

or equivalently

$$E(z|x) = \frac{1}{2} \left(w + ps_x^x + (1-p)s_{-x}^x - \frac{\bar{c}}{\mu\lambda} \left(\frac{p}{E_{h|x}(P_h) + g_x^x} + \frac{1-p}{E_{h|-x}(P_h) + g_{-x}^x} \right) \right).$$

Now consider the growth effect of moving from an acyclical policy whereby $g_x^x = g_{-x}^x = g^x$ to the countercyclical policy $g_L^x = g^x + (1-p_L)\varepsilon$ and $g_H^x = g^x - p_L\varepsilon$ (with $p_L = p$ if $x = L$, and $p_L = 1-p$ if $x = H$). In other words, we consider the growth effect of a mean preserving spread in government consumption, with $g_L^x - g_H^x = \varepsilon$.

We have:

$$\begin{aligned} & E(z|x) \\ &= \frac{1}{2} \left(w + p_L s_L^x + (1-p_L)s_H^x - \frac{\bar{c}}{\mu\lambda} \left(\frac{p_L}{pP_L + (1-p)P_H + g_L^x} + \frac{1-p_L}{pP_H + (1-p)P_L + g_H^x} \right) \right). \end{aligned}$$

Thus

$$\begin{aligned} \frac{\partial E(z|x)}{\partial \varepsilon} &= \frac{1}{2} \frac{\bar{c}p(1-p)}{\mu\lambda} \left(\frac{1}{(pP_L + (1-p)P_H + g^x + (1-p_L)\varepsilon)^2} - \frac{1}{(pP_H + (1-p)P_L + g^x - p_L\varepsilon)^2} \right) \\ &> 0 \end{aligned}$$

as long as $(2p-1)(P_H - P_L) > \varepsilon$.²³

Moreover

$$\frac{\partial^2 E(\lambda z|x)}{\partial \bar{c} \partial \varepsilon} > 0.$$

²³We can see from the above expression that if μ was procyclical the benefit from countercyclicity would be higher. Indeed, in this case, under laissez-faire firms would cut long term investments by more during slumps.

Thus the more firms depend upon external finance (that is, the higher \bar{c}), the more positive is the growth response to a more countercyclical expenditures policy.

Similarly

$$\frac{\partial^2 E(\lambda z|x)}{\partial \mu \partial \varepsilon} < 0$$

So the tighter firms' credit constraints, for example because of higher asset intangibility (that is the lower μ), the more growth benefits from countercyclical policy.

A mean preserving spread of s_j on the contrary has no impact on growth, since the equilibrium R&D intensity z is linear in the amount of initial wealth available for investment. Hence:

Proposition 2 *When optimal investment is an interior solution, a mean preserving spread in government expenditures towards more countercyclical increases long-term investment in R&D as long as $g_L^j - g_H^j \leq (2p-1)(P_H - P_L)$. Moreover, this effect is increased when \bar{c} is higher or μ is lower. On the contrary, a change in $s_L^j - s_H^j$ does not have any long-term growth effect.*

Thus, a smaller expected market size for long term projects reduces the amount of knowledge augmenting investment. Given that the credit constraint induces a concavity in the firm's profit function (since more long term investment also means a lower probability to overcome the liquidity shock), more countercyclical expenditure policy will increase expected growth. The probability that long term projects do not carry through, is increasing in z , and all the more so when \bar{c} is higher or μ is lower. This in turn explains why R&D incentives and therefore growth will be enhanced by a more countercyclical policy, all the more in firms which depend more upon external finance or in firms with less tangible assets.

One can show that the growth-maximizing level of countercyclicality is obtained for $\varepsilon = (2p-1)(P_H - P_L)$ (as long as this translates into positive government spending in both states of the world), that is for expected long term projects with market size equalized across states of nature.

Remark 3 *One could go further and derive the growth maximizing policy subject to the constraint that the budget must be balanced in expectation - and also subject to some upper limit on the allowed government deficit in each period. In fact one can show that the growth-maximizing policy subject to these constraints, is*

to increase the market size for long term investments up to the point where the marginal benefit of government expenditures (which is to increase the share of entrepreneurial wealth devoted to long-term investments) is equal to its marginal cost (which is to reduce the entrepreneur's ex ante wealth because of taxation). This optimal market size is given by $\sqrt{\frac{\bar{c}}{\mu\lambda}}$: in other words, since the expected private market size is smaller when the economy is currently in a slump, government expenditures should be higher in a slump than in a boom in order to maximize RD incentives and thereby knowledge growth. Finally, letting the government smooth its budget over the cycle makes it possible to have a countercyclical policy in government expenditures without requiring a procyclical policy in taxes.

To summarize the main predictions of the model: (i) countercyclical government expenditures are more growth-enhancing for firms that are more dependent upon external finance or in firms with less tangible assets; (ii) it is the countercyclicality of government expenditures, more than that of government tax or subsidies, which matter for growth in economies with such firms. We now confront these predictions to the data.

3 Econometric methodology and data

The left-hand side (henceforth, LHS) variable of our main estimation equation, is the average annual growth rate of real value added or alternatively labour productivity in industry j in country k for a given period of time, say $[t; t + n]$. Labour productivity is defined as the ratio of real value added to total employment.²⁴ On the right hand side (henceforth, RHS), we introduce industry and country fixed effects $\{\alpha_j; \beta_k\}$ to control for unobserved heterogeneity across industries and across countries. The variable of interest $(ic_j) \times (fpc_k^{t,t+n})$, is the interaction between industry j 's characteristic (namely, external financial dependence or asset tangibility) and the degree of (counter-) cyclical policy in country k over the period $[t, t + n]$. Finally, we control for initial conditions by including the term $\log\left(\frac{y_{jk}^t}{y_k^t}\right)$ as an additional regressor on the RHS of the estimation equation. When the LHS variable is real value added growth, y_{jk}^t is the initial real value added

²⁴ Although we also have access to industry level data on hours worked, we prefer to focus on productivity per worker and not productivity per hour as measurement error is more likely to affect the latter than the former.

in industry j in country k and y_k^t is total real value added in the manufacturing sector in country k . When the LHS variable is labour productivity growth, then y_{jk}^t is the initial labour productivity in industry j in country k whereas y_k^t is the average labour productivity in the manufacturing sector in country k . Letting ε_{jk} denote the error term, our main estimation equation can then be expressed as:

$$\frac{1}{n} \left[\ln \left(y_{jk}^{t+n} \right) - \ln \left(y_{jk}^t \right) \right] = \alpha_j + \beta_k + \gamma (ic_j) \times (fpc_k^{t,t+n}) - \delta \log \left(\frac{y_{jk}^t}{y_k^t} \right) + \varepsilon_{jk} \quad (1)$$

Following Rajan and Zingales (1998) we measure industry specific characteristics using firm level data in the US. External financial dependence is measured as the average across all firms in a given industry of the ratio of capital expenditures minus current cash flow to total capital expenditures. Asset tangibility is measured as the average across all firms in a given industry of the ratio of the value of net property, plant and equipment to total assets. This methodology is predicated on the assumptions that: (i) differences in financial dependence/asset tangibility across industries are largely driven by differences in technology; (ii) technological differences persist over time across countries; (iii) countries are relatively similar in terms of the overall institutional environment faced by firms. Under those three assumptions, the US based industry-specific measure is likely to be a valid interactor for industries in countries other than the US.²⁵ Now, there are good reasons to believe that these assumptions are satisfied particularly if we restrict the empirical analysis to a sample of OECD countries. For example, if pharmaceuticals require proportionally more external finance than textiles in the US, this is likely to be the case in other OECD countries. Moreover, since little convergence has occurred among OECD countries over the past twenty years, cross-country differences are likely to persist over time. Finally, to the extent that the US are more financially developed than other countries worldwide, US based measures of financial dependence as well as asset tangibility are likely to provide the least noisy measures of industry level financial dependence or asset tangibility.

We now focus attention on how to measure fiscal policy cyclicity over the time interval $[t, t + n]$, i.e

²⁵Note however that this measure is unlikely to be valid for the US as it likely reflects the equilibrium of supply and demand for capital in the US and therefore is endogenous.

how to construct the RHS variable ($fpc_k^{t,t+n}$). Our approach is to measure fiscal policy cyclicity as the marginal change in fiscal policy following a change in the domestic output gap. Thus we use country-level data over the period $[t; t+n]$ to estimate the following country-by-country "auxiliary" equation:

$$def_k^\tau = \eta_k + (fpc_k^{t,t+n}) z_k^\tau + u_k^\tau, \quad (2)$$

where: (i) $\tau \in [t; t+n]$; (ii) def_k^τ is a measure of fiscal policy in country k in year τ : for example total fiscal balance, primary balance, total government expenditures, or government revenues, as a ratio of GDP; (iii) z_k^τ measures the output gap in country k in year τ , that is the percentage difference between actual and potential GDP, and therefore represents the country's current position in the cycle; (iv) η_k is a constant and u_k^τ is an error term.

Equation (2) is estimated separately for each country k in our sample. For example, if the LHS of (2) is the ratio of fiscal balance to GDP, a positive (resp. negative) regression coefficient ($fpc_k^{t,t+n}$) reflects a countercyclical (resp. pro-cyclical) fiscal policy as the country's fiscal balance improves (resp. deteriorates) in upturns.

Moreover, as robustness checks, we consider the case where fiscal policy indicators in regression (2) are measured as a ratio to potential and not current GDP. This alternative specification helps make sure that the cyclicity parameter ($fpc_k^{t,t+n}$) captures changes in the numerator of the LHS variable -related to fiscal policy- rather than in the denominator -related to cyclical variations in output-.²⁶ Furthermore more elaborated fiscal policy specifications could also be considered. In particular, following Gali and Perrotti (2003), a debt stabilization motive as well as a control for fiscal policy persistence could be included. Thus, letting b_k^τ denote the ratio of public debt to GDP in country k in year τ , we could estimate fiscal policy

²⁶When data is available, we also measure fiscal policy using cyclically adjusted variables. In this case, the cyclicity of fiscal policy results more directly from discretionary policy. Put differently, cyclicity stemming from automatic stabilizers is purged out. Unreported results -available upon request- show very similar to the case where fiscal policy indicators are not cyclically adjusted.

cyclicalities $(fpc_{2,k}^{t,t+n})$ over the period $[t; t+n]$ using the modified "auxiliary" equation:²⁷

$$def_k^\tau = \alpha_k + (fpc_{2,k}^{t,t+n})z_k^\tau + \beta_k b_k^{\tau-1} + \gamma_k def_k^{\tau-1} + \varepsilon_k^\tau \quad (3)$$

where z_k^τ is as previously the output gap in country k in year τ , $def_k^{\tau-1}$ is the fiscal policy indicator in country k in year $\tau - 1$ and ε_k^τ is an error term. Following Rajan and Zingales (1998), when estimating our main equation (1) we rely on a simple OLS procedure, correcting for heteroscedasticity bias whenever needed, without worrying much further about endogeneity issues. In particular, the interaction term between industry specific characteristics and fiscal policy cyclicalities is likely to be largely exogenous to the LHS variable, be it industry value added or labour productivity growth. First, our external financial dependence variable pertains to industries in the US while the growth variables on the LHS involves other countries than the US. Hence reverse causality whereby industry growth outside the US could affect external financial dependence or asset tangibility of industries in the US, seems quite implausible. Moreover, in some of our regressions the LHS variable is measured over a post 1990 time period whereas the financial dependence indicator is always measured on a pre 1990 period, which further reduces the possibility of reverse causality. Second, fiscal policy cyclicalities is measured at a macro level whereas the LHS growth variable is measured at industry level, which again reduces the scope for reverse causality as long as each individual sector represents a small share of total output in the domestic economy. Yet, as an additional exogeneity test, we produce additional regressions where we instrument for fiscal policy cyclicalities.²⁸

Our data sample focuses on 17 industrialized OECD countries plus the US. In particular, we do not include Central and Eastern European countries and other emerging market economies. Industry-level data for this country sample are available from the period between 1980 and 2005, from which we consider three different time spans: 1980-2005, 1985-2005, and 1990-2005. The 1990-2005 time period allows us to include Germany in the regression exercise.²⁹ Our data come from four different sources. Industry level real value added and

²⁷Results presented in this paper are based on the simple fiscal policy counter-cyclicalities specification (2). Using specification (3) does not modify the main conclusions of the paper and are available upon request to the authors.

²⁸Our tables show a large degree of similarity between OLS and IV estimations, thereby confirming that our basic empirical strategy properly addresses the endogeneity issue, even though it uses OLS estimations.

²⁹See the Appendix for more details on the data and country sample.

labour productivity data are drawn from the EU KLEMS dataset while Industry level R&D data is drawn from OECD STAN database.³⁰ The primary source of data for measuring industry financial dependence, is Compustat which gathers balance sheets and income statements for US listed firms. We draw on Rajan and Zingales (1998) and Raddatz (2006) to compute the industry level indicators for financial dependence.³¹ We draw on Braun and Larrain (2005) to compute industry level indicators for asset tangibility. Finally, macroeconomic fiscal and other control variables are drawn from the OECD Economic Outlook dataset and from the World Bank Financial Development and Structure database.³²

4 Results

4.1 Main estimations

We first estimate our main regression equation (1), with real value added growth as LHS variable, using financial dependence (table 1a-1) or asset tangibility (table 1b-1) as industry-specific interactors, and where fiscal policy cyclicalilty is first estimated using the ratio of total fiscal balance to actual or potential GDP as LHS fiscal policy indicator in regression (2).

Insert table 1a-1 here

Insert table 1b-1 here

As announced above, we consider three different time periods, and for each time period the fiscal policy cyclicalilty is derived from estimating (2) over the same time period. The empirical results show that real value added growth is significantly and positively correlated with the interaction of external financial dependence (table 1a-1) or of asset tangibility (table 1b-1) with fiscal policy countercyclicalilty: a larger sensitivity to the output gap of total fiscal balance to GDP (actual or potential) raises industry real valued added growth,

³⁰These data are available respectively from: http://www.euklems.net/data/08i/all_countries_08I.txt and <http://stats.oecd.org/Index.aspx>

³¹Rajan and Zingales data is accessible at: <http://faculty.chicagogsb.edu/luigi.zingales/research/financing.htm>

³²The OECD Economic Outlook dataset is accessible at: <http://titania.sourceoecd.org>. The World Bank Financial Development and Structure database is accessible at: <http://siteresources.worldbank.org>

and the more so for industries with higher financial dependence or for industries with lower asset tangibility.

Three remarks are worth making at this point. First, the estimated coefficients are highly significant -in spite of the relatively conservative standard errors estimates which we cluster at the country level- and also they are relatively stable across different time periods. Second, the pairwise correlation between industry financial dependence and industry asset tangibility is around -0.6 which is significantly below -1 . In other words, these two variables are far from being perfectly correlated, which in turn implies that the two tables (table 1a-1) and (table 1b-1) are not just mirroring each other, but instead convey complementary information. Finally, the estimated coefficients remain essentially the same whether the LHS variable in equation (2) is taken as a ratio of actual or potential GDP, so that the correlations between $(fpc_k^{t,t+n})$ and industry growth indeed capture the effect of fiscal policy rather than just the effect of changes in actual GDP.

We now repeat the same estimation exercise, but taking labour productivity as the LHS variable in our main estimation equation (1). Comparing the results from this new set of regressions with the previous tables, in turn will allow us to decompose the overall effect of fiscal policy countercyclicality on industry value added growth into employment growth and productivity growth.

Insert table 2a-1 here

Insert table 2b-1 here

As is shown in table 2a-1 and 2b-1, labour productivity growth is significantly affected by the interaction between financial dependence/asset tangibility and fiscal policy cyclicity: a larger sensitivity to the output gap of total fiscal balance to -actual or potential- GDP raises industry labour productivity growth, and the more so for industries with higher financial dependence or lower asset tangibility. Decomposing real value added growth into labour productivity growth and employment growth, regressions with external financial dependence as the industry interactor show that about 75% of the effect of fiscal countercyclicality on value added growth is driven by productivity growth, the remaining 25% corresponding to employment growth.

Finally, we repeat the first estimation exercise, but using the ratio of primary fiscal balance, not total fiscal balance, to GDP as the LHS variable in the auxiliary equation (2). The difference between these two indicators is that the primary fiscal balance does not include net interest repayments to/from the government. The results are qualitatively similar in both cases: industries with larger financial dependence and/or lower asset tangibility tend to benefit disproportionately from a more countercyclical fiscal policy in the sense of a larger sensitivity of the primary fiscal balance to variations in the output gap.

Insert table 1a-2 here

Insert table 1b-2 here

This same conclusion obtains when using labour productivity growth as the LHS variable in (1). However, the estimated coefficients are smaller in absolute value when fiscal policy is measured through primary fiscal balance. This is related to the fact that the cross-country dispersion in the cyclicalities of primary fiscal balance is larger than the cross-country dispersion in the cyclicalities of total fiscal balance, over any of the three time periods we consider.

Insert table 2a-2 here

Insert table 2b-2 here

4.2 Magnitude of the effects

How large are the effects implied by the above regressions? To get a sense of the magnitudes involved in these regressions, we compute the growth gain implied by above tables for an industry moving from the bottom to the top quartile (i.e from the 25% to the 75% percentile) in financial dependence in a country where fiscal policy countercyclicalities would also move from the 25% to the 75% percentile. Similarly, we compute the growth gain for an industry whose asset tangibility would move from the 75% to the 25% percentile of

the corresponding distribution.³³ As shown in Table 3 below, the approximate growth gain in terms of real value added growth is between 1.1 and a 2.4 percentage points per year while the growth gain in terms of productivity growth is between 1 and 1.7 percentage points per year.

Estimation period: 1980-2005	Value Added growth	Productivity growth
Interaction(Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)	2,36%	1,73%
Interaction(Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicality)	1,13%	1,04%
Interaction(Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicality)	1,72%	1,25%
Interaction(Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicality)	1,28%	1,12%

Table 3: Growth gain from a change in industry characteristics and fiscal policy cyclicity

These magnitudes are fairly large especially when compared to the corresponding figures in Rajan and Zingales (1998). According to their results, the gain in real value added growth from moving from the 25% to the 75% percentile, both in a country's level of financial development and in a industry's level of external financial dependence, is roughly equal to 1 percentage point per year.

However, the following considerations are worth pointing out here. First, these are diff-and-diff (cross-country/cross industry) effects, which are not directly interpretable as country-wide effects. Second, we are just looking at manufacturing sectors, which represent no more than 40% of total GDP of countries in our sample. Third, there is a high degree of dispersion in fiscal policy cyclicity across countries in our sample. Hence moving from the 25% to the 75% percentile in the countercyclicity of primary fiscal balance relative to GDP, corresponds to a radical change in the design of fiscal policy along the cycle, which in turn is unlikely to take place in any individual country over the time periods we are considering. Fourth, this simple computation does not take into account the possible costs associated with the transition from a steady state with low fiscal countercyclicity to a steady state with high fiscal countercyclicity. Yet,

³³ Given our difference in difference specification, it is impossible to infer the economic magnitudes of the estimated coefficients differently. In particular, the presence of industry and country fixed effects precludes investigating the impact of a change in fiscal policy cyclical pattern for a given industry or conversely the effect of a change in industry characteristics (financial dependence or asset tangibility) in a country with a given cyclical pattern of fiscal policy. Both these effects are absorbed with our country and industry dummies.

the above exercise suggests that differences in the cyclical policy is an important driver of the observed cross-country/cross-industry differences in value added and productivity growth.

5 Robustness tests

5.1 Alternative auxiliary regression

Here we check the robustness of our results to replacing our auxiliary equation (2) by the alternative specification (3) where, on the RHS of the equation, we add the one-period lagged fiscal policy indicator to control for possible auto-correlation as well as the ratio of gross or net government liabilities to GDP on the RHS to control for debt stabilization motives. On the LHS of (3), we consider both total and primary fiscal balance as a ratio of actual or potential GDP. Finally in the main specification (1), we consider labor productivity growth as our dependent variable. Results show that in spite of relatively lower levels of statistical significance -which we attribute to the smaller data sample for estimating this alternative specification-, the estimated coefficients are quite close to those obtained when using the benchmark auxiliary equation (2). Also interestingly, we find no significant difference between the estimated coefficients for total and primary fiscal balance countercyclicalities.

Insert table 2a-3 here

Insert table 2b-3 here

5.2 Positive versus negative external financial dependence

A further robustness test is to account for the existence of industries with negative financial dependence. These are industries for which capital expenditures have been lower than internally generated funds over the 1980-1990 period in the US. For such industries, a more countercyclical fiscal policy translates into a more negative (not more positive) interaction coefficient. Indeed, a positive value of the interaction coefficient for a sector with negative financial dependence, would imply that a more countercyclical fiscal policy is

growth reducing, not growth enhancing. To check the validity of this point, we decompose the interaction term in two components: an interaction between financial dependence and fiscal policy countercyclicality for industries with positive external financial dependence and an interaction term for industries with negative external financial dependence. If a more countercyclical fiscal policy is growth enhancing for all sectors, we should obtain a positive coefficient when financial dependence is positive but a negative coefficient when financial dependence is positive.

Insert table 1a-4 here

Insert table 1a-5 here

Table 1a-4 and table 1a-5 essentially show that once we split the interaction term in two components, respectively for sectors with positive and negative financial dependence, the interaction term is positive only for sectors with positive external financial dependence, whereas it is negative for industries with negative financial dependence. Moreover, the magnitude and statistical significance of the estimated coefficient is larger for the positive component of the interaction term whereas the negative component is not always significant. This in turn may reflect both, the fact that industries with a negative financial dependence represent a small share of the overall sample, and that industries with negative financial dependence are unlikely to be credit-constrained and therefore sensitive to changes in the cyclicity of fiscal policy. Finally as is shown in table 2a-4 and 2a-5 below, the same results hold when looking at labour productivity growth instead of real value added growth as the LHS variable in the main estimation equation (1).

Insert table 2a-4 here

Insert table 2a-5 here

5.3 Outliers driving the results?

A third test is to make sure that our empirical results are not driven by one particular country in the sample. To check this point we remove countries one by one and show that the interaction between industry level financial dependence or asset tangibility and the cyclical policy, is always significantly correlated with industry-level real value added growth. Moreover, the interaction coefficients remain relatively stable across all regressions, which confirms that no particular country in the sample is driving the results, neither the statistical significance nor the economic magnitude of the effects. After all, this is not too surprising given the relatively homogeneity of the set of countries in our sample. And the same conclusions carry over when looking at labour productivity growth as the LHS variable in the regressions: no single country in the sample is responsible for the positive effect of fiscal policy countercyclicality on industry-level labour productivity growth in more financially dependent industries (or in industries with lower asset tangibility).

Insert table 1a-6 here

Insert table 1b-6 here

Insert table 2a-6 here

Insert table 2b-6 here

5.4 Competing stories

How robust is the effect of countercyclical fiscal policy on industry growth, and to what extent are not we picking up other factors or stories when looking at the correlation between industry growth and the cyclical policy? In this subsection, we choose to focus on a few potentially relevant alternative explanations.

5.4.1 Financial development

First, a more countercyclical fiscal policy could reflect a higher degree of financial development in the country.³⁴ And financial development in turn is known to have a positive effect on growth, particularly for industries that are more dependent on external finance (Rajan and Zingales (1998)). To disentangle the effects of countercyclical fiscal policy from the effects of financial development, in the RHS of the main estimation equation (1) we control for financial development and its interaction with external financial dependence. Columns 1-3 in Tables 1a-10; 2a-10; 1b-10; and 2a-10 below show that controlling for financial development and its interaction with financial dependence or asset tangibility - where financial development is measured either by the ratio of private credit to GDP, or by the ratio of financial system deposits to GDP, or by the real long term interest rate³⁵ - does not affect the interaction coefficients between financial dependence and the cyclical policy. In other words, the magnitude of the effect of fiscal policy cyclical policy on industry growth, remains unaffected once financial development is controlled for. Moreover, these estimations suggests that financial development is a significant determinant of growth but only when measured by the volume of financial system deposits: the more funds are made available by the financial system, the faster value added or labour productivity growth will be in industries with higher financial dependence or lower asset tangibility. However, neither the level of private credit to GDP nor the real cost of capital appear to have any significant effect on value added or labour productivity growth once we control for the cyclical policy and its interaction with financial dependence or asset tangibility.

5.4.2 Inflation

Second, inflation may also impact on the effect of fiscal policy particularly in more financially dependent sectors. In particular, inflation is widely perceived as having a negative impact on the allocative efficiency of capital across sectors, the idea being that higher inflation makes it more difficult for outside investors to identify high productivity projects: then, the higher the inflation rate, the less efficiently should the

³⁴For example Aghion and Marisnecu (2007) point to a positive correlation between fiscal policy counter-cyclicality and financial development.

³⁵The two first indicators measure the availability of external capital, the third one measures its cost.

financial system allocate capital across sectors. And to the extent that the sectors that should suffer more from capital misallocation are the more financially dependent sectors, inflation is more likely to have a negative effect on value added/productivity growth for industries with more reliance on external finance. In contrast, in industries with no or low financial dependence, this negative effect of inflation is less likely to hold. ³⁶ Columns 4-5 in Tables 1a-10; 2a-10; 1b-10; and 2a-10 indeed show that the interaction of inflation and financial dependence is never a significant determinant of industry real value added or labour productivity growth. The same applies to the interaction between inflation and industry asset tangibility. Finally, we investigate whether this absence of any significant effect of inflation could be related to the level of central bank policy rates, given that central banks tend to determine their policy rates depending on inflation. However, we find that even after controlling for central bank policy rates the interaction between fiscal policy cyclicalities and industry financial dependence remains significant. This suggests that the positive effect on industry growth of stabilizing fiscal policies is largely unrelated to average inflation in a country: for given inflation rate, raising the counter-cyclical pattern of fiscal policy raises growth more in industries with higher financial dependence or with lower asset tangibility. These results however do not imply that high average inflation is not costly: in particular, a higher level of inflation is likely to affect the local government's ability to carry out a stabilizing fiscal policy.

5.4.3 Fiscal discipline and size of government

Third, if the cyclical component of fiscal policy does significantly affect industry value added growth or labour productivity growth, it is also likely that the structural component of fiscal policy should play a similar role. In fact it could be the case that countercyclical fiscal policy is positively correlated with industry growth not so much because countercyclicality per se is growth-enhancing but rather because a more countercyclical fiscal policy simply reflects better designed fiscal policy or higher fiscal discipline over the cycle. In the same vein, the cyclicalities of fiscal policy might be a proxy for the relative size of government: thus it could

³⁶A reinforcing consideration is that increases in short term interest rates by central banks in response to higher inflation or higher expected inflation, should also have a negative effect on industry value added and productivity growth that is larger for industries with higher financial dependence or lower asset tangibility.

just be that larger governments are less countercyclical by nature, in which case our empirical results would simply reflect the view that a smaller government is good for growth and the more so in industries with lower asset tangibility or higher financial dependence. To address this potential objection, we consider three different measures of fiscal institutions: average fiscal balance, average government expenditures, average government revenues. The first measure captures fiscal discipline, the second and third measures capture the relative size of government. Columns 6 to 8 in Tables 1a-10; 2a-10; 1b-10; and 2a-10 below show that in the horse race between the cyclicalities of fiscal policy and those three measures of structural fiscal policy, countercyclicality in primary fiscal balance is a significant determinant of industry growth irrespective of the average primary fiscal balance. Moreover, the ratio of average primary fiscal balance to GDP does not appear to carry any significant explanatory power of its own in the growth regressions. This does not imply that fiscal discipline, for example as reflected through a moderate average fiscal deficit, does not matter for industry growth: tighter fiscal discipline should actually make it easier for a government to implement a more countercyclical fiscal policy whereas large average fiscal deficits should make it harder for any government to stabilize the economy in downturns, particularly if the government, as any other agent in the economy, also faces a borrowing constraint.

Insert table 1a-10 here

Insert table 1b-10 here

Insert table 2a-10 here

Insert table 2b-10 here

5.5 Instrumental variable estimation

An important limitation to the empirical analysis carried out in this paper, is that the countercyclicality of macroeconomic policies cannot be directly observed: instead, it can only be inferred through an auxiliary

regression. This in turn raises a number of problems. Among those lies the fact that countercyclicality is measured with a standard error, so that our OLS estimations suffer from the fact that we do not observe the “true” value of countercyclicality but only a “noisy” signal of this value. One approach to deal with this problem, is to perform instrumental variable estimations.³⁷ Thus here we instrument fiscal policy countercyclicality using a set of instrumental variables which share two basic characteristics. First, these variables are directly observed, none of them is inferred from another model or regression. Second, these variables are all predetermined: that is, the period over which the instrumental variables are observed, is anterior to the time periods over which the auxiliary regressions that determine our countercyclicality measure, are run.

More precisely, we carry out two alternative sets of IV estimations. In the first set of IV estimations we use "economic variables" as instruments, for example GDP per worker, the ratio of imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. In the second set of IV estimations, we use legal and political variables as instruments: legal origin (English, French, German, Scandinavian), district magnitudes, a dummy variable for federal political system, an index for government centralization (ratio of central to general government expenditures).

Insert table 1a12-1a13 here

Insert table 1b12-1b13 here

Insert table 2a12-2a13 here

Insert table 2b12-2b13 here

Tables 1a12-1a13 (resp. 1b12-1b13) show our IV estimations results when real value added growth is the

³⁷In other words, the instrumental variable estimations we perform in this subsection are meant to rule out the possibility that our above findings about the interaction between financial dependence and fiscal policy counter-cyclicality being a significant determinant of industry level growth, might simply reflect the fact that the standard errors around the estimates of fiscal policy counter-cyclicality have not been properly taken into account in the estimations.

LHS variable while fiscal policy countercyclicality is instrumented using economic variables and interacted with industry financial dependence (resp. asset tangibility). Three main results emerge from this exercise. First, whether it is with financial dependence or with asset tangibility, a more countercyclical fiscal policy significantly improves industry growth, and the more so in industries with larger degree of external financial dependence or with lower asset tangibility, in the IV regressions. Second, the effects implied by the IV estimations, are of comparable magnitude to those implied by the above OLS regressions: the interaction coefficients are at least as large and often larger (in absolute value) in the IV estimations than in the OLS estimations. Finally, the Hansen test for instrument validity is generally accepted at the 5% level, although some regressions appear to be borderline in this respect. Similar conclusions can be drawn from tables 2a12-2a13 and tables 2b12-2b13 where the dependent variable is industry labour productivity growth.

Next, we consider the case where fiscal policy cyclicity is instrumented using legal and political variables. Tables 1a14-2a15 (resp. 1b14-1b15) show the IV estimations results when real value added growth is the LHS variable. Again, we find that the instrumentation does not affect the significance or the magnitude of the interaction coefficients between external dependence (or asset tangibility) and fiscal policy countercyclicality in the growth regressions.

Insert table 1a14-1a15 here

Insert table 1b14-1b15 here

However, there is one case in which The Hansen validity test is not passed by legal and political instruments (we find a p- value at 1% in Table 1a-15, for the estimation period 1980-2005), whereas the test is always passed when using "economic" instruments. However, legal and political variables always pass the instrument validity test when labour productivity growth is the dependent variable: namely, the hypothesis that these

instruments are valid, is always verified both at 5 and 10% levels (Tables 2a14-2a15 and 2b14-15).

Insert table 2a14-2a15 here

Insert table 2b14-2b15 here

6 Opening the fiscal policy box: expenditures and revenues

In this section, we push the analysis one step further by investigating the relative importance of the government expenditures and the government revenues components of fiscal policy in the overall effect of a more countercyclical fiscal policy on industry growth. For this purpose, we replace the baseline equation (1) by one in which, on the RHS, we interact industry financial dependence or asset tangibility with both, the countercyclicality in government revenues and the countercyclicality in government expenditures.³⁸³⁹ Tables 1a-7 and 1b-7 show the results from this decomposition when the LHS variable is industry real value added growth.

Insert table 1a-7 here

Insert table 1b-7 here

We see hardly any difference both in the significance and the magnitude of the interaction coefficients associated with these two measures of fiscal policy.

Using labor productivity growth as the LHS variable in the growth regressions (Tables 2a-7; 2b-7) yields a similar picture: both components of fiscal policy interact significantly with (industry) external financial

³⁸From a statistical point of view, this decomposition boils down to relaxing the assumption that estimated coefficients for expenditures and revenues should be equal in absolute value since fiscal balance is simply the difference between revenues and expenditures.

³⁹Following the OECD decomposition for government accounts, government expenditures are the sum of government consumption, government investment, net capital transfers, property income, government subsidies, social security expenditures and other expenditures. Government revenues are the sum of total direct taxes, indirect taxes, social security revenues, property income and other current revenues.

dependence or asset tangibility.

Insert table 2a-7 here

Insert table 2b-7 here

As shown in these tables, we obtain similar results whether we take the ratios of government revenues and government expenditures over actual GDP versus potential GDP.

Now, to gain further intuition on this set of results, we focus on primary government expenditures and primary government revenues, i.e. we abstract from government interest payments and government interest revenues. Then the picture becomes somewhat easier to interpret. Indeed the interactions of external financial dependence or asset tangibility with both, primary expenditures and primary revenues, come out significant. However, the impact of countercyclicality in primary government expenditures is on average about twice as large as that of countercyclicality in primary government revenues.

Insert table 1a-8 here

Insert table 1b-8 here

Insert table 2a-8 here

Insert table 2b-8 here

Overall, these findings suggest that the positive effect on industry growth of fiscal balance countercyclicality, involves both the expenditure and the revenue sides of fiscal policy. That the estimated interaction coefficient for primary expenditures be twice as large as the interaction coefficient for primary revenues, is consistent with the notion that fiscal policy over the cycle affects industry growth at least partly through a market size effect: indeed, the cyclicity in government expenditures has a more direct effect on the demand for firms' products than the cyclicity in government revenues which affects demand only indirectly through

its impact on agents' budget constraints. This intuition is reinforced by our finding of more significant interaction coefficients between financial dependence and the countercyclicality of government expenditures when looking at primary expenditures instead of total expenditures. Total expenditures embed interest payments from the government, which have no direct impact on aggregate demand. In the model developed in Section 2, countercyclical government expenditures have a stabilizing effect on the returns to productivity enhancing investments by stabilizing market size over the cycle. Anticipating this, entrepreneurs raise their investments in long term productivity enhancing projects. In contrast, the potential effect of countercyclical government revenues operates only indirectly through tightening or relaxing agents' credit constraints.

6.1 R&D spending and fiscal policy countercyclicality

To confirm the empirical result that fiscal policy counter-cyclicality tends to be more effective in raising growth through expenditures than through revenues we extend our analysis to R&D spending. Recall that in our model a more countercyclical fiscal policy has a positive growth effects on more credit-constrained firms because it encourages them to pursue long-term innovative investments. In this subsection we look at whether a more counter-cyclical fiscal policy has any impact on the growth in R&D spending at industry level over the estimation period 1987-2005 . To this end we run the regression

$$\frac{1}{n} \left[\ln \left(RD_{jk}^{t+n} \right) - \ln \left(RD_{jk}^t \right) \right] = \alpha_j + \beta_k + \gamma (ic_j) \times (fpc_k^{t,t+n}) - \delta \log \left(\frac{RD_{jk}^t}{RD_k^t} \right) + \varepsilon_{jk} \quad (4)$$

where RD_{jk}^t is the volume of R&D spending at time t in country k and industry j , other variables being similar to specification (1). We first look at the impact of counter-cyclical fiscal balance on the growth rate of industry R&D spending; and then decompose fiscal policy into fiscal revenues and expenditures.

Two main findings emerge from this exercise. First, the countercyclicality of total fiscal balance to GDP has a significant effect on the growth rate of R&D spending. This conclusion holds whether we look at ratios of fiscal balance to actual or potential GDP. Second, when decomposing fiscal balance between expenditures and revenues, we find that the positive effect of a more countercyclical fiscal balance on industry R&D is mostly driven by the countercyclical pattern of government expenditures, not that of government revenues

whose estimated coefficient is not significantly different from zero. This we see as further evidence of a market size channel lying behind the positive impact of countercyclical fiscal policy on industry R&D and thereby on industry growth.

Insert table R&D here

7 Conclusions

In this paper, we have analyzed the extent to which macroeconomic policy over the business cycle can affect industry growth, focusing on fiscal policy. Following the Rajan-Zingales (1998) methodology, we have interacted credit constraints (measured either by external financial dependence or by the negative of asset tangibility in US industries) and the cyclical policy at country level, and assessed the impact of this interaction on value added or productivity growth at industry level. Using this methodology which helps address potential endogeneity issues, we provided evidence to the effect that a more countercyclical fiscal policy enhances output and productivity growth more in more financially constrained industries, i.e in industries whose US counterparts are more dependent on external finance or display lower asset tangibility. This result appears to survive a number of robustness tests, in particular the inclusion of structural macroeconomic variables such as financial development, inflation, average fiscal deficits, to which one could also add openness to trade or the net current account position.⁴⁰ This in turn suggests, either that the growth impact of the cyclical pattern of fiscal policy is of comparable (or even greater) importance to that of more structural features, or that the effect of these structural features operates at least partly through their own effects on the cyclical policy.

The results suggests at least three avenues for future research. A first avenue is to engage in a more systematic assessment of the interactions that exist between growth and the business cycle, particularly those operating through the financial channel. A second question that emerges naturally from the analysis in this paper, is whether the above analysis of the effects of fiscal policy countercyclical policy on industry growth, can be transposed from the fiscal to the monetary sphere of the economy. A positive answer to this question

⁴⁰The corresponding regressions can be provided upon request to the authors.

would be all the more important that presumably monetary policy can be more easily modified over time than fiscal policy, although transmission lags may be larger for monetary policy former than for fiscal policy. Finally, comes the question of the determinants of countercyclical fiscal policy and especially the institutional features or arrangements that foster or prevent countercyclicality. Answering this question will shed new light on the ongoing debate about the relationship between growth and institutions.

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8 Appendix A: Proofs

8.1 Proof of Lemma 1

The firm's problem is to maximize

$$\begin{aligned} & \max \left\{ P_j k + \lambda \gamma z \min \left(\frac{\mu P_j k}{\bar{c}}, 1 \right) E_{h|j} (\beta (P_h + g_j^x)) \right\} \\ & \text{subject to} \quad : \quad k + z \leq w + s_j^x. \end{aligned}$$

Recall that we assumed that $\lambda (E(P_h|j)) > P_j$.

First notice that the solution cannot feature $\frac{\mu P_j k}{\bar{c}} > 1$, indeed if it were the case then the program would be linear in z , so as we assumed $P_j \leq \lambda E(P_h|j)$, the firm's owner would profitably deviate by increasing z in all points of the region $\frac{\mu P_j k}{\bar{c}} > 1$. Thus the solution must feature $\frac{\mu P_j k}{\bar{c}} \leq 1$.

Now consider the case where there is a positive probability of unsuccessful innovation (this will necessarily be the case when $\frac{\mu P_j(w+s_j^x)}{\bar{c}} \leq 1$), then the first order condition for the maximization problem leads to:

$$\begin{aligned} z_j &= \frac{1}{2} \left(w + s_j^x - \frac{\bar{c}}{\mu \lambda (E_{h|j}(P_h) + g_j^x)} \right) \\ k_j &= \frac{1}{2} \left(w + s_j^x + \frac{\bar{c}}{\mu \lambda (E_{h|j}(P_h) + g_j^x)} \right) \end{aligned}$$

So, if $w + s_j^x > \frac{\bar{c}}{\mu \lambda (E_{h|j}(P_h) + g_j^x)} > 0$ ($z_j > 0$) and $\frac{1}{2} \left(\frac{\mu P_j}{\bar{c}} (w + s_j^x) + \frac{P_j}{\lambda (E_{h|j}(P_h) + g_j^x)} \right) < 1$, the optimum will be this interior solution (with a positive probability of unsuccessful innovation).

If $w + s_j^x < \frac{\bar{c}}{\mu \lambda (E_{h|j}(P_h) + g_j^x)}$, the solution will be $z_j = 0$ (also with a positive probability of unsuccessful innovation); finally if $\frac{1}{2} \left(\frac{\mu P_j}{\bar{c}} (w + s_j^x) + \frac{P_j}{\lambda (E_{h|j}(P_h) + g_j^x)} \right) > 1$, the solution will feature $\frac{\mu P_j k}{\bar{c}} = 1$ so that $k_j = \frac{\bar{c}}{\mu P_j}$ and $z_j = w + s_j^x - \frac{\bar{c}}{\mu P_j}$.

9 Appendix B

Countries in the sample	Abbreviations
Australia	AUS
Austria	AUT
Belgium	BEL
Germany	DEU
Denmark	DNK
Spain	ESP
Finland	FIN
France	FRA
Great-Britain	GBR
Greece	GRC
Ireland	IRE
Italy	ITA
Japan	JPN
Luxembourg	LUX
Netherlands	NLD
Portugal	PRT
Sweden	SWE

Industries in the sample

Description	ISIC rev.3 code
FOOD , BEVERAGES AND TOBACCO	15t16
Food and beverages	15
Tobacco	16
TEXTILES, TEXTILE , LEATHER AND FOOTWEAR	17t19
Textiles and textile	17t18
Textiles	17
Wearing apparel, dressing and dying of fur	18
Leather, leather and footwear	19
WOOD AND OF WOOD AND CORK	20
PULP, PAPER, PAPER , PRINTING AND PUBLISHING	21t22
Pulp, paper and paper	21
Printing, publishing and reproduction	22
Publishing	221
Printing and reproduction	22x
CHEMICAL, RUBBER, PLASTICS AND FUEL	23t25
Coke, refined petroleum and nuclear fuel	23
Chemicals and chemical	24
Pharmaceuticals	244
Chemicals excluding pharmaceuticals	24x
Rubber and plastics	25
OTHER NON-METALLIC MINERAL	26
BASIC METALS AND FABRICATED METAL	27t28
Basic metals	27
Fabricated metal	28
MACHINERY, NEC	29
ELECTRICAL AND OPTICAL EQUIPMENT	30t33
Office, accounting and computing machinery	30
Electrical engineering	31t32
Electrical machinery and apparatus, nec	31
Insulated wire	313
Other electrical machinery and apparatus nec	31x
Radio, television and communication equipment	32
Electronic valves and tubes	321
Telecommunication equipment	322
Radio and television receivers	323
Medical, precision and optical instruments	33
Scientific instruments	331t3
Other instruments	334t5
TRANSPORT EQUIPMENT	34t35
Motor vehicles, trailers and semi-trailers	34
Other transport equipment	35
Building and repairing of ships and boats	351
Aircraft and spacecraft	353
Railroad equipment and transport equipment nec	35x
MANUFACTURING NEC; RECYCLING	36t37
Manufacturing nec	36
Recycling	37

Variable	Data Sources
	Source
Industry Real Value Added	EU KLEMS
Industry Labour Productivity	EU KLEMS
Industry R&D spending	OECD STAN
External Financial Dependence	Compustat
Asset Tangibility	Compustat
Output Gap	OECD Economic Outlook
Total Fiscal Balance	OECD Economic Outlook
Primary Fiscal Balance	OECD Economic Outlook
Government Expenditures	OECD Economic Outlook
Government Revenues	OECD Economic Outlook
CPI Inflation	OECD Economic Outlook
Real Long Term Interest Rate	OECD Economic Outlook
Nominal Short Term Interest Rate	OECD Economic Outlook
Private Credit	World Bank Financial Structure and Development
Financial System Deposits	World Bank Financial Structure and Development

Table 1a-1

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.784** (0.284)	-0.795** (0.282)	-0.397 (0.458)	-0.408 (0.455)	-0.811* (0.456)	-0.819* (0.452)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalities)	6.724*** (1.526)		6.767*** (1.537)		5.981*** (1.831)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalities)		6.742*** (1.434)		6.729*** (1.398)		6.005*** (1.767)
Observations	521	521	523	593	593	524
R-squared	0.569	0.571	0.533	0.489	0.488	0.530

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1b-1

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.515 (0.350)	-0.517 (0.351)	-0.0395 (0.492)	-0.0436 (0.492)	-0.448 (0.484)	-0.451 (0.483)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicalities)	-13.77*** (4.544)		-13.86*** (4.580)		-12.81*** (3.444)	
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicalities)		-13.74*** (4.388)		-13.76*** (4.385)		-12.87*** (3.342)
Observations	521	521	523	523	593	593
R-squared	0.550	0.550	0.511	0.511	0.470	0.471

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-1

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.598*** (0.492)	-2.590*** (0.493)	-2.387*** (0.485)	-2.374*** (0.487)	-2.235*** (0.537)	-2.229*** (0.539)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclical)	4.960*** (0.796)		5.178*** (1.176)		4.994*** (1.486)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclical)		4.920*** (0.738)		5.121*** (1.118)		4.964*** (1.452)
Observations	516	516	518	583	583	519
R-squared	0.552	0.553	0.480	0.428	0.428	0.470

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclical is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-1

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.562*** (0.482)	-2.559*** (0.482)	-2.464*** (0.462)	-2.459*** (0.463)	-2.264*** (0.479)	-2.263*** (0.480)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclical)	-12.78*** (3.902)		-13.84*** (4.163)		-14.45*** (3.213)	
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclical)		-12.63*** (3.876)		-13.69*** (4.095)		-14.45*** (3.135)
Observations	516	516	518	518	583	583
R-squared	0.541	0.542	0.468	0.468	0.417	0.417

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to GDP (resp. potential GDP) Counter-Cyclical is the coefficient of the output gap when total fiscal balance to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-2

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.587*** (0.537)	-2.585*** (0.536)	-2.356*** (0.478)	-2.352*** (0.477)	-2.184*** (0.546)	-2.181*** (0.546)
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclical)	3.392*** (0.485)		4.382*** (0.832)		4.198*** (0.947)	
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclical)		3.397*** (0.484)		4.349*** (0.844)		4.239*** (0.965)
Observations	516	516	518	583	583	519
R-squared	0.551	0.551	0.484	0.432	0.432	0.471

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclical is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-2

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.552*** (0.511)	-2.549*** (0.511)	-2.435*** (0.456)	-2.429*** (0.456)	-2.215*** (0.489)	-2.212*** (0.490)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclical)	-8.059*** (2.514)		-11.02*** (2.720)		-11.56*** (1.895)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclical)		-8.159*** (2.502)		-11.10*** (2.719)		-11.81*** (1.887)
Observations	516	516	518	518	583	583
R-squared	0.539	0.539	0.468	0.468	0.417	0.418

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to GDP (resp. potential GDP) Counter-Cyclical is the coefficient of the output gap when primary fiscal balance to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-3

Dependent variable: Labour Productivity Growth								
Estimation Period: 1980-2005	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Relative Labor Productivity	-2.073** (0.873)	-2.056** (0.868)	-2.092** (0.867)	-2.080** (0.859)	-2.066** (0.872)	-2.049** (0.868)	-2.089** (0.865)	-2.076** (0.857)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalities (gross liabilities))	5.041** (2.133)							
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalities (net liabilities))		5.317** (2.072)						
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalities (gross liabilities))			5.229* (2.313)					
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalities (net liabilities))				5.242* (2.447)				
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalities (gross liabilities))					5.053** (2.030)			
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalities (net liabilities))						5.279** (1.968)		
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalities (gross liabilities))							5.174* (2.288)	
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalities (net liabilities))								5.150* (2.399)
Observations	342	342	342	342	342	342	342	342
R-squared	0.454	0.455	0.454	0.453	0.454	0.456	0.454	0.453

Note: The dependent variable is the average annual growth rate in labor productivity in each country in each industry for the period 1980-2005. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities (gross liabilities) is the regression coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed for each country on a constant and the output gap, controlling for lagged total fiscal balance to (resp. potential) GDP and lagged gross government liabilities to (resp. potential) GDP for each country. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities (net liabilities) is the regression coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed for each country on a constant and the output gap, controlling for lagged total fiscal balance to (resp. potential) GDP and lagged net government liabilities to (resp. potential) GDP for each country.

Table 2b-3

Dependent variable: Labour Productivity Growth								
Estimation Period: 1980-2005	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Relative Labor Productivity	-2.073** (0.873)	-2.056** (0.868)	-2.092** (0.867)	-2.080** (0.859)	-2.066** (0.872)	-2.049** (0.868)	-2.089** (0.865)	-2.076** (0.857)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicalities (gross liabilities))	-14.74** (5.221)							
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicalities (net liabilities))		-14.48** (5.271)						
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicalities (gross liabilities))			-13.24* (5.885)					
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicalities (net liabilities))				-13.30* (6.270)				
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicalities (gross liabilities))					-14.48** (5.034)			
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicalities (net liabilities))						-14.18** (5.144)		
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicalities (gross liabilities))							-13.29** (5.845)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicalities (net liabilities))								-13.28* (6.167) (2.399)
Observations	342	342	342	342	342	342	342	342
R-squared	0.454	0.455	0.454	0.453	0.454	0.456	0.454	0.453

Note: The dependent variable is the average annual growth rate in labor productivity in each country in each industry for the period 1980-2005. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Asset tangibility is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities (gross liabilities) is the regression coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed for each country on a constant and the output gap, controlling for lagged total fiscal balance to (resp. potential) GDP and lagged gross government liabilities to GDP for each country. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicalities (net liabilities) is the regression coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed for each country on a constant and the output gap, controlling for lagged total fiscal balance to (resp. potential) GDP and lagged net government liabilities to GDP. The interaction variable is the prod

Table 1a-4

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.814** (0.282)	-0.826** (0.281)	-0.445 (0.451)	-0.459 (0.448)	-0.900* (0.465)	-0.912* (0.460)
Interaction (Positive Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalilty)	7.463*** (1.732)		7.795*** (1.783)		8.055*** (1.987)	
Interaction (Negative Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalilty)	-2.773 (3.624)		-6.348 (4.429)		-18.03*** (5.346)	
Interaction (Positive Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalilty)		7.494*** (1.637)		7.752*** (1.645)		8.075*** (1.919)
Interaction (Negative Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalilty)		-2.933 (3.577)		-6.240 (4.334)		-17.74*** (5.399)
Observations	521	521	523	593	593	524
R-squared	0.570	0.572	0.536	0.502	0.501	0.531

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Total Fiscal Balance to GDP Counter-Cyclicalilty is the coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors - clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1a-5

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.812*** (0.244)	-0.814*** (0.245)	-0.448 (0.430)	-0.445 (0.431)	-0.900* (0.457)	-0.901* (0.455)
Interaction (Positive Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalilty)	5.152*** (0.995)		6.342*** (0.818)		6.453*** (1.395)	
Interaction (Negative Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalilty)	-0.766 (1.308)		-4.079 (2.765)		-12.45** (5.408)	
Interaction (Positive Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalilty)		5.193*** (0.966)		6.334*** (0.818)		6.562*** (1.397)
Interaction (Negative Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalilty)		-0.914 (1.286)		-4.129 (2.750)		-12.63** (5.559)
Observations	521	521	523	593	593	524
R-squared	0.570	0.570	0.538	0.501	0.501	0.528

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Total Fiscal Balance to GDP Counter-Cyclicalilty is the coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors - clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-4

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.628*** (0.462)	-2.625*** (0.459)	-2.530*** (0.427)	-2.522*** (0.427)	-2.544*** (0.370)	-2.538*** (0.372)
Interaction (Positive Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalit)	6.196*** (1.037)		6.829*** (1.441)		7.485*** (1.512)	
Interaction (Negative Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicalit)	-11.72 (6.724)		-17.83** (6.040)		-25.84*** (4.196)	
Interaction (Positive Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalit)		6.163*** (0.989)		6.742*** (1.377)		7.428*** (1.477)
Interaction (Negative Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicalit)		-11.91* (6.703)		-17.39** (5.865)		-25.34*** (4.211)
Observations	516	516	518	583	583	519
R-squared	0.558	0.559	0.493	0.459	0.459	0.477

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Total Fiscal Balance to GDP Counter-Cyclicalit is the coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-5

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.628*** (0.509)	-2.625*** (0.508)	-2.490*** (0.420)	-2.480*** (0.420)	-2.489*** (0.386)	-2.483*** (0.389)
Interaction (Positive Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalit)	4.291*** (0.499)		5.695*** (0.942)		6.093*** (0.958)	
Interaction (Negative Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicalit)	-7.334** (3.131)		-12.18** (4.369)		-18.91*** (5.000)	
Interaction (Positive Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalit)		4.306*** (0.499)		5.660*** (0.950)		6.163*** (0.983)
Interaction (Negative Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicalit)		-7.348** (3.164)		-11.96** (4.328)		-19.05*** (5.117)
Observations	516	516	518	583	583	519
R-squared	0.557	0.557	0.496	0.460	0.460	0.478

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Total Fiscal Balance to GDP Counter-Cyclicalit is the coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1a-6

Dependent variable: Real Value Added Growth									
Country withdrawn	None	AUS	AUT	BEL	DEU	DNK	ESP	FIN	FRA
Log of initial share in manufacturing Value Added	-0.814*** (0.245)	-0.799*** (0.254)	-0.736*** (0.243)	-0.769*** (0.250)	-0.814*** (0.245)	-0.840*** (0.238)	-0.771** (0.264)	-0.783*** (0.252)	-0.895*** (0.258)
Interaction (Positive Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalilty)	5.193*** (0.966)	5.224*** (0.959)	5.118*** (0.967)	5.257*** (1.038)	5.193*** (0.966)	5.207*** (1.161)	5.208*** (0.996)	5.011*** (0.936)	5.294*** (0.949)
Interaction (Negative Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalilty)	-0.914 (1.286)	-0.826 (1.337)	-0.893 (1.036)	-1.029 (1.269)	-0.914 (1.286)	0.141 (2.416)	-1.101 (1.032)	-0.595 (1.328)	-0.983 (1.232)
Observations	521	489	488	485	521	486	477	490	481
R-squared	0.570	0.570	0.566	0.586	0.570	0.559	0.584	0.559	0.626
Country withdrawn	GBR	GRC	IRL	ITA	JPN	LUX	NLD	PRT	SWE
Log of initial share in manufacturing Value Added	-0.803*** (0.242)	-0.874*** (0.273)	-0.660* (0.310)	-0.883*** (0.239)	-0.964*** (0.222)	-0.814*** (0.245)	-0.718*** (0.235)	-0.842*** (0.269)	-0.803** (0.258)
Interaction (Positive Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalilty)	5.206*** (0.946)	4.046*** (1.334)	5.772*** (0.565)	5.211*** (1.415)	5.157*** (0.951)	5.193*** (0.966)	5.184*** (0.997)	5.228*** (0.981)	5.389*** (0.803**)
Interaction (Negative Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalilty)	-0.259 (1.671)	-2.672 (2.450)	-1.116 (1.150)	-1.013 (1.356)	-0.611 (1.602)	-0.914 (1.286)	-0.928 (1.266)	-1.244 (1.517)	-1.518 (0.803**)
Observations	476	488	481	494	483	521	494	493	489
R-squared	0.570	0.564	0.516	0.581	0.570	0.570	0.581	0.580	-0.803**

Note: The dependent variable is the average annual growth rate in real value added for the period 1980-2005 in each column for each industry in each country. The country code in each column represents the country withdrawn from sample estimation. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Primary Fiscal Balance to potential GDP Counter-Cyclicalilty is the coefficient of the output gap when primary fiscal balance to potential GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1b-6

Dependent variable: Real Value Added Growth									
Estimation Period: 1980-2005 Country withdrawn	None	AUS	AUT	BEL	DEU	DNK	ESP	FIN	FRA
Log of Initial Share in Manufacturing Value Added	-0.517 (0.351)	-0.474 (0.369)	-0.429 (0.360)	-0.461 (0.363)	-0.517 (0.351)	-0.523 (0.352)	-0.437 (0.376)	-0.483 (0.368)	-0.566 (0.368)
Interaction (Asset Tangibility and Total Fiscal Balance to Potential GDP Counter-Cyclical)	-13.74*** (4.388)	-13.74*** (4.430)	-13.93*** (4.422)	-14.76*** (4.551)	-13.74*** (4.388)	-11.81** (4.583)	-13.44** (4.494)	-13.74** (4.599)	-12.94** (4.521)
Observations	521	489	488	485	521	486	477	490	481
R-squared	0.550	0.549	0.546	0.567	0.550	0.539	0.563	0.540	0.600
Estimation Period: 1980-2005 Country withdrawn	GBR	GRC	IRL	ITA	JPN	LUX	NLD	PRT	SWE
Log of Initial Share in Manufacturing Value Added	-0.494 (0.340)	-0.754** (0.309)	-0.288 (0.356)	-0.609 (0.346)	-0.651* (0.360)	-0.517 (0.351)	-0.411 (0.341)	-0.519 (0.401)	-0.582 (0.406)
Interaction (Asset Tangibility and Total Fiscal Balance to Potential GDP Counter-Cyclical)	-13.76*** (4.393)	-10.74*** (3.476)	-13.40*** (4.365)	-16.51*** (4.686)	-13.43*** (4.404)	-13.74*** (4.388)	-13.84*** (4.449)	-14.22*** (4.623)	-16.38** (5.621)
Observations	476	488	481	494	483	521	494	493	489
R-squared	0.549	0.558	0.479	0.569	0.548	0.550	0.561	0.560	0.559

Note: The dependent variable is the average annual growth rate in real value added for the period 1980-2005 in each column for each industry in each country. The country code in each column represents the country withdrawn from sample estimation. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to potential GDP Counter-Cyclical is the coefficient of the output gap when total fiscal balance to potential GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-6

Dependent variable: Labour Productivity Growth									
Estimation Period: 1980-2005 Country withdrawn	None	AUS	AUT	BEL	DEU	DNK	ESP	FIN	FRA
Log of Initial Relative Productivity		-2.634*** (0.510)	-2.488*** (0.528)	-2.581*** (0.496)	-2.625*** (0.508)	-2.599*** (0.499)	-2.606*** (0.503)	-2.625*** (0.527)	-2.631*** (0.559)
Interaction (Positive Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalit)		4.390*** (0.471)	4.289*** (0.495)	4.380*** (0.454)	4.306*** (0.499)	4.282*** (0.712)	4.340*** (0.446)	4.236*** (0.538)	4.342*** (0.527)
Interaction (Negative Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalit)		-7.322** (3.174)	-7.191* (3.438)	-7.549* (3.534)	-7.348** (3.164)	-11.63*** (3.849)	-7.444* (3.447)	-7.021** (3.039)	-7.317* (3.624)
Observations		487	483	480	516	481	472	485	476
R-squared		0.561	0.560	0.567	0.557	0.553	0.563	0.546	0.638
Estimation Period: 1980-2005 Country withdrawn	GBR	GRC	IRL	ITA	JPN	LUX	NLD	PRT	SWE
Log of Initial Relative Productivity		-2.636*** (0.505)	-2.690*** (0.608)	-2.146*** (0.504)	-2.668*** (0.498)	-3.061*** (0.347)	-2.625*** (0.508)	-2.623*** (0.514)	-2.653*** (0.567)
Interaction (Positive Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalit)		4.279*** (0.516)	4.138*** (0.631)	4.631*** (0.462)	4.500*** (0.537)	4.061*** (0.583)	4.306*** (0.499)	4.384*** (0.461)	4.367*** (0.503)
Interaction (Negative Financial dependence and Primary Fiscal Balance to pot. GDP Counter-Cyclicalit)		-6.476** (2.440)	-5.238 (5.280)	-6.922** (2.718)	-7.744** (3.333)	-6.078** (2.300)	-7.348** (3.164)	-7.382** (3.185)	-7.550** (2.987)
Observations		472	483	476	489	478	516	490	488
R-squared		0.559	0.539	0.481	0.568	0.569	0.557	0.573	0.559

Note: The dependent variable is the average annual growth rate in labor productivity for the period 1980-2005 for each industry in each country. The country code in each column represents the country withdrawn from sample estimation. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. External financial dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to GDP Counter-Cyclicalit is the regression coefficient of the output gap when total fiscal balance to GDP is regressed on a constant and the output gap. The interaction variable is the product of external financial dependence and total fiscal balance to GDP counter-cyclicalit. All estimated coefficient are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-6

Dependent variable: Labour Productivity Growth									
Estimation Period: 1980-2005 Country withdrawn	None	AUS	AUT	BEL	DEU	DNK	ESP	FIN	FRA
Log of Initial Relative Productivity	-2.559*** (0.482)	-2.561*** (0.485)	-2.409*** (0.493)	-2.507*** (0.469)	-2.559*** (0.482)	-2.522*** (0.499)	-2.540*** (0.488)	-2.548*** (0.500)	-2.584*** (0.530)
Interaction (Asset Tangibility and Total Fiscal Balance to Potential GDP Counter-Cyclicalit)	-12.63*** (3.876)	-12.71*** (3.841)	-12.75*** (3.931)	-13.35*** (3.765)	-12.63*** (3.876)	-10.71** (4.151)	-12.28*** (3.898)	-13.17*** (3.978)	-12.01*** (3.857)
Observations	516	487	483	480	516	481	472	485	476
R-squared	0.542	0.545	0.545	0.552	0.542	0.535	0.546	0.532	0.616
Estimation Period: 1980-2005 Country withdrawn	GBR	GRC	IRL	ITA	JPN	LUX	NLD	PRT	SWE
Log of Initial Relative Productivity	-2.582*** (0.486)	-2.566*** (0.568)	-2.181*** (0.515)	-2.577*** (0.467)	-3.006*** (0.290)	-2.559*** (0.482)	-2.552*** (0.490)	-2.561*** (0.545)	-2.593*** (0.544)
Interaction (Asset Tangibility and Total Fiscal Balance to Potential GDP Counter-Cyclicalit)	-12.32*** (3.971)	-11.25** (4.162)	-13.10*** (4.115)	-16.45*** (2.512)	-11.47** (3.844)	-12.63*** (3.876)	-12.68*** (3.889)	-12.55*** (4.033)	-12.86** (5.557)
Observations	472	483	476	489	478	516	490	488	484
R-squared	0.543	0.532	0.458	0.561	0.553	0.542	0.556	0.542	0.552

Note: The dependent variable is the average annual growth rate in labor productivity for the period 1980-2005 for each industry in each country. The country code in each column represents the country withdrawn from sample estimation. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to potential GDP Counter-Cyclicalit is the coefficient of the output gap when total fiscal balance to potential GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1a-10

Dependent variable: Real Value Added Growth								
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Share in Manufacturing Value Added	-0.373 (0.366)	-0.291 (0.347)	-0.847** (0.323)	-0.842** (0.317)	-0.846** (0.318)	-0.389 (0.425)	-0.396 (0.434)	-0.531 (0.378)
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicality)	5.315*** (1.015)	5.492*** (0.651)	4.963*** (0.734)	4.828*** (0.998)	4.782*** (1.031)	6.011*** (0.827)	6.175*** (1.094)	5.961*** (0.882)
Interaction (Financial Dependence and Average Private Credit to GDP)	2.387 (5.191)							
Interaction (Financial Dependence and Average Deposits to GDP)		5.863*** (1.341)						
Interaction (Financial Dependence and Average Real long term interest rate)			0.867 (1.262)					
Interaction (Financial Dependence and Average CPI Inflation)				-0.282 (0.457)				
Interaction (Financial Dependence and Average Short term Policy interest rate)					-0.362 (0.575)			
Interaction (Financial Dependence and Average Gov. Expenditures to GDP)						-0.181 (0.155)		
Interaction (Financial Dependence and Average Gov. Revenues to GDP)							-0.140 (0.165)	
Interaction (Financial Dependence and Average Primary Fiscal Balance to GDP)								-0.980 (0.957)
Observations	414	387	483	483	483	523	523	523
R-squared	0.610	0.644	0.537	0.537	0.537	0.540	0.538	0.540

Note: The dependent variable is the average annual growth rate in real value added for the period 1985-2005 for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to GDP Counter-Cyclicality is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap for each country. Interaction variables are the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1b-10

Dependent variable: Real Value Added Growth								
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Share in Manufacturing Value Added	0.112 (0.492)	0.264 (0.470)	-0.434 (0.405)	-0.431 (0.408)	-0.426 (0.407)	-0.0198 (0.467)	-0.0179 (0.470)	-0.0387 (0.464)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)	-9.398*** (2.939)	-10.87*** (2.432)	-8.998*** (2.770)	-8.976** (3.307)	-9.763** (3.464)	-12.95*** (3.396)	-14.09*** (3.951)	-11.43*** (3.102)
Interaction (Asset Tangibility and Average Private Credit to GDP)	-10.88 (11.84)							
Interaction (Asset Tangibility and Average Financial System Deposits to GDP)		-17.58*** (3.043)						
Interaction (Asset Tangibility and Average Real long term interest rate)			-1.924 (3.915)					
Interaction (Asset Tangibility and Average CPI Inflation)				0.487 (1.328)				
Interaction (Asset Tangibility and Average Short term Policy interest rate)					0.0821 (1.482)			
Interaction (Asset Tangibility and Average Gov. Expenditures to GDP)						0.675 (0.396)		
Interaction (Asset Tangibility and Average Gov. Revenues to GDP)							0.631 (0.414)	
Interaction (Asset Tangibility and Average Primary Fiscal Balance to GDP)								1.243 (2.893)
Observations	414	387	483	483	483	523	523	523
R-squared	0.580	0.610	0.508	0.508	0.508	0.516	0.515	0.512

Note: The dependent variable is the average annual growth rate in real value added for the period 1985-2005 for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to GDP Counter-Cyclicality is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap for each country. Interaction variables are the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%, 10%) level is indicated by *** (resp. **, *)

Table 2a-10

Dependent variable: Labour Productivity Growth								
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Relative Labor Productivity	-2.178*** (0.500)	-2.079*** (0.529)	-2.890*** (0.426)	-2.795*** (0.393)	-2.822*** (0.416)	-2.322*** (0.551)	-2.338*** (0.537)	-2.791*** (0.402)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclical)	4.134*** (1.062)	4.487*** (0.910)	4.710*** (1.270)	3.834*** (0.897)	4.146*** (1.181)	4.588*** (1.143)	4.606*** (1.451)	3.787*** (0.808)
Interaction (Financial Dependence and Average Private Credit to GDP)	2.619 (6.002)							
Interaction (Financial Dependence and Average Financial System Deposits to GDP)		5.431*** (1.521)						
Interaction (Financial Dependence and Average CPI Inflation)			0.453 (0.485)					
Interaction (Financial Dependence and Average Real long term interest rate)				0.0189 (1.031)				
Interaction (Financial Dependence and Average Short term Policy interest rate)					0.186 (0.527)			
Interaction (Financial Dependence and Average Gov. Expenditures to GDP)						-0.0691 (0.164)		
Interaction (Financial Dependence and Average Gov. Revenues to GDP)							-0.0456 (0.172)	
Interaction (Financial Dependence and Average Primary Fiscal Balance to GDP)								-1.104* (0.625)
Observations	409	383	478	478	478	518	518	518
R-squared	0.583	0.620	0.482	0.481	0.481	0.485	0.484	0.493

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated 1985-2005 for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to GDP Counter-Cyclical is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap for each country. Interaction variables are the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-10

Dependent variable: Labor Productivity Growth								
COEFFICIENT	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Relative Labor Productivity	-2.338*** (0.370)	-2.293*** (0.393)	-2.871*** (0.391)	-2.841*** (0.383)	-2.870*** (0.396)	-2.406*** (0.480)	-2.408*** (0.478)	-2.481*** (0.412)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)	-8.781*** (2.596)	-11.03*** (2.355)	-9.843** (3.872)	-8.332** (3.039)	-10.14** (3.992)	-12.31*** (3.976)	-13.17** (4.747)	-11.48*** (3.046)
Interaction (Asset Tangibility and Average Private Credit to GDP)	-14.69 (12.95)							
Interaction (Asset Tangibility and Average Financial System Deposits to GDP)		-17.75*** (2.864)						
Interaction (Asset Tangibility and Average CPI Inflation)			-0.378 (1.058)					
Interaction (Asset Tangibility and Average Real long term interest rate)				-1.775 (2.851)				
Interaction (Asset Tangibility and Average Short term Policy interest rate)					-0.615 (1.387)			
Interaction (Asset Tangibility and Average Gov. Expenditures to GDP)						0.431 (0.470)		
Interaction (Asset Tangibility and Average Gov. Revenues to GDP)							0.431 (0.485)	
Interaction (Asset Tangibility and Average Primary Fiscal Balance to GDP)								1.595 (2.473)
Observations	409	383	478	478	478	518	518	518
R-squared	0.564	0.593	0.464	0.464	0.464	0.471	0.471	0.470

Note: The dependent variable is the average annual growth rate in labor productivity for the period 1985-2005 for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to GDP Counter-Cyclicality is the regression coefficient of the output gap when primary fiscal balance to GDP is regressed on a constant and the output gap for each country. Interaction variables are the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1a-12

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-1.086*** (0.301)	-1.090*** (0.298)	-0.917*** (0.288)	-0.917*** (0.287)	-1.129*** (0.345)	-1.135*** (0.344)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	9.980*** (2.195)		8.361*** (1.315)		6.912*** (1.898)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		9.778*** (2.113)		8.107*** (1.260)		6.919*** (1.862)
Hansen J. Stat p. value	2.915 (0.572)	2.972 (0.563)	3.797 (0.434)	3.836 (0.429)	5.070 (0.280)	4.613 (0.329)
Observations	483	483	483	483	521	521
R-squared	0.069	0.073	0.077	0.080	0.060	0.061

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated

Table 1a-13

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.970*** (0.286)	-0.968*** (0.286)	-0.926*** (0.278)	-0.915*** (0.278)	-1.146*** (0.338)	-1.145*** (0.338)
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicality)	4.972*** (1.225)		6.663*** (0.939)		5.684*** (1.339)	
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicality)		4.959*** (1.219)		6.564*** (0.925)		5.780*** (1.338)
Hansen J. Stat	7.762	7.724	3.057	3.239	2.184	1.889
<i>p. value</i>	(0.101)	(0.102)	(0.548)	(0.519)	(0.702)	(0.756)
Observations	483	483	483	483	521	521
R-squared	0.084	0.085	0.083	0.083	0.063	0.063

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated

Table 1b-12

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.666** (0.285)	-0.666** (0.284)	-0.461 (0.302)	-0.464 (0.302)	-0.708** (0.353)	-0.711** (0.353)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicality)	-22.44*** (7.227)		-18.41*** (4.821)		-14.80*** (5.504)	
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicality)		-21.70*** (7.006)		-17.75*** (4.652)		-14.77*** (5.426)
Hansen J. Stat	4.050	4.214	2.896	3.068	5.923	5.817
<i>p. value</i>	0.399	0.378	0.575	0.547	0.205	0.213
Observations	483	483	483	483	521	521
R-squared	0.029	0.031	0.025	0.026	0.029	0.029

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated

Table 1b-13

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.627** (0.281)	-0.627** (0.281)	-0.432 (0.300)	-0.432 (0.300)	-0.676* (0.353)	-0.676* (0.353)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)	-9.283** (4.353)		-13.78*** (3.526)		-11.98*** (3.990)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicality)		-9.283** (4.353)		-13.78*** (3.526)		-11.98*** (3.990)
Hansen J. Stat	8.245	8.245	3.657	3.657	5.099	5.099
<i>p. value</i>	0.0830	0.0830	0.454	0.454	0.277	0.277
Observations	483	483	483	483	521	521
R-squared	0.038	0.038	0.027	0.027	0.027	0.027

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated

Table 2a-12

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-3.056*** (0.328)	-3.049*** (0.328)	-2.811*** (0.383)	-2.803*** (0.383)	-2.722*** (0.355)	-2.716*** (0.355)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	4.826** (1.951)		4.769*** (1.475)		5.052*** (1.706)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		4.757** (1.903)		4.652*** (1.427)		5.024*** (1.686)
Hansen J. Stat	4.169	4.157	8.053	8.044	2.446	2.415
<i>p. value</i>	0.384	0.385	0.0896	0.0900	0.654	0.660
Observations	478	478	478	478	515	515
R-squared	0.236	0.237	0.166	0.167	0.139	0.139

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by ***

Table 2a-13

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-3.062*** (0.330)	-3.061*** (0.330)	-2.775*** (0.379)	-2.772*** (0.379)	-2.665*** (0.355)	-2.660*** (0.356)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	2.788** (1.175)		4.044*** (1.107)		4.097*** (1.282)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		2.772** (1.169)		3.983*** (1.095)		4.140*** (1.289)
Hansen J. Stat	4.681	4.679	5.832	6.008	1.197	1.269
<i>p. value</i>	0.322	0.322	0.212	0.199	0.879	0.867
Observations	478	478	478	478	515	515
R-squared	0.233	0.233	0.173	0.172	0.145	0.144

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated

Table 2b-12

Dependent variable: Labor Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.986*** (0.318)	-2.986*** (0.318)	-2.810*** (0.383)	-2.686*** (0.348)	-2.686*** (0.348)	-3.506*** (0.402)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicality)	-13.39** (6.231)		-14.54*** (4.569)		-14.58*** (5.051)	
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicality)		-12.96** (6.050)		-14.59*** (5.012)		-13.14*** (3.595)
Hansen J. Stat <i>p. value</i>	2.851 0.583	2.906 0.574	1.937 0.747	1.906 0.753	3.056 0.548	2.889 0.577
Observations	478	478	515	515	479	479
R-squared	0.214	0.214	0.124	0.125	0.185	0.185

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-13

Dependent variable: Labor Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-3.002*** (0.318)	-3.001*** (0.317)	-2.781*** (0.387)	-2.619*** (0.356)	-2.621*** (0.356)	-3.477*** (0.405)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)	-7.238** (3.396)		-11.27*** (3.457)		-11.98*** (3.825)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicality)		-7.238** (3.399)		-12.20*** (3.851)		-11.19*** (3.078)
Hansen J. Stat <i>p. value</i>	6.659 0.247	6.666 0.247	1.189 0.880	1.208 0.877	1.756 0.781	1.579 0.813
Observations	478	478	515	515	479	479
R-squared	0.209	0.210	0.123	0.123	0.184	0.185

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the regression coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap. The interaction variable is the product of variables in parentheses. Set of instruments for estimations (i) and (ii): GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, nominal short term interest rate, private credit by banks to GDP. Set of instruments for estimations (iii), (iv), (v) and (vi): GDP per worker, Imports to GDP, CPI inflation, nominal long term interest rate, private credit to GDP. All instruments are beginning of period values. All estimated coefficients are in |

Table 1a-14

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.982*** (0.279)	-0.986*** (0.279)	-0.592* (0.333)	-0.590* (0.331)	-0.795** (0.379)	-0.791** (0.378)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	7.670*** (2.567)		9.957*** (3.072)		6.283*** (2.231)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		7.542*** (2.479)		9.568*** (2.906)		6.165*** (2.182)
Hansen J. Stat	9.667 (0.0852)	9.266 (0.0989)	8.011 (0.156)	7.918 (0.161)	6.733 (0.241)	6.777 (0.238)
<i>p. value</i>						
Observations	488	488	490	490	539	539
R-squared	0.047	0.050	0.013	0.019	0.033	0.034

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1a-15

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.941*** (0.283)	-0.943*** (0.284)	-0.586* (0.325)	-0.576* (0.325)	-0.838** (0.386)	-0.830** (0.385)
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicality)	5.726*** (2.172)		8.815*** (2.938)		6.814*** (2.455)	
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicality)		5.802*** (2.182)		8.754*** (2.911)		6.899*** (2.479)
Hansen J. Stat	13.58 (0.0185)	13.36 (0.0202)	7.090 (0.214)	7.214 (0.205)	6.222 (0.285)	6.304 (0.278)
<i>p. value</i>						
Observations	488	488	490	490	539	539
R-squared	0.033	0.033	0.016	0.016	0.025	0.025

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1b-14

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.769*** (0.278)	-0.771*** (0.278)	-0.281 (0.329)	-0.285 (0.328)	-0.505 (0.374)	-0.509 (0.374)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	-16.80** (7.670)		-21.67** (10.42)		-15.52** (7.204)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		-16.62** (7.471)		-20.94** (9.951)		-15.31** (7.098)
Hansen J. Stat	6.636	6.395	4.563	4.453	2.765	2.821
<i>p. value</i>	0.156	0.172	0.335	0.348	0.598	0.588
Observations	488	488	490	490	539	539
R-squared	0.026	0.027	-0.002	0.000	0.010	0.011

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 1b-15

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.740*** (0.282)	-0.743*** (0.281)	-0.255 (0.321)	-0.257 (0.321)	-0.470 (0.376)	-0.471 (0.375)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	-13.40** (6.361)		-18.41** (8.601)		-16.52** (7.729)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		-13.62** (6.409)		-18.44** (8.623)		-16.86** (7.885)
Hansen J. Stat	7.106	7.006	3.937	3.987	2.433	2.513
<i>p. value</i>	0.130	0.136	0.415	0.408	0.657	0.642
Observations	488	488	490	490	539	539
R-squared	0.015	0.016	-0.004	-0.003	0.001	0.002

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-14

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.635*** (0.430)	-2.629*** (0.429)	-2.454*** (0.531)	-2.446*** (0.530)	-2.383*** (0.517)	-2.381*** (0.517)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	5.751*** (2.184)		7.797*** (2.582)		4.234** (1.817)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		5.596*** (2.110)		7.464*** (2.449)		4.134** (1.778)
Hansen J. Stat	3.342	3.294	8.111	8.113	7.237	7.298
<i>p. value</i>	0.647	0.655	0.150	0.150	0.204	0.199
Observations	483	483	485	485	529	529
R-squared	0.158	0.160	0.089	0.093	0.101	0.102

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-15

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.730*** (0.437)	-2.729*** (0.437)	-2.576*** (0.534)	-2.566*** (0.532)	-2.395*** (0.521)	-2.392*** (0.521)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	4.748** (1.868)		7.281*** (2.414)		4.728** (1.947)	
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		4.777** (1.874)		7.198*** (2.396)		4.745** (1.968)
Hansen J. Stat	5.433	5.319	6.885	7.038	6.565	6.712
<i>p. value</i>	0.365	0.378	0.229	0.218	0.255	0.243
Observations	483	483	485	485	529	529
R-squared	0.154	0.154	0.101	0.101	0.105	0.105

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-14

Dependent variable: Labor Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.558*** (0.406)	-2.557*** (0.406)	-2.494*** (0.487)	-2.394*** (0.483)	-2.392*** (0.482)	-3.127*** (0.533)
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicality)	-14.81** (6.872)		-22.13** (9.526)		-14.47** (6.347)	
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicality)		-14.57** (6.698)		-14.25** (6.248)		-17.47** (8.060)
Hansen J. Stat	2.628	2.456	3.414	3.313	1.986	2.037
<i>p. value</i>	0.622	0.653	0.491	0.507	0.738	0.729
Observations	483	483	529	529	486	486
R-squared	0.144	0.145	0.084	0.084	0.100	0.101

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (res

Table 2b-15

Dependent variable: Labor Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.597*** (0.414)	-2.595*** (0.413)	-2.549*** (0.497)	-2.375*** (0.482)	-2.376*** (0.481)	-3.147*** (0.538)
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)	-11.95** (5.725)		-19.06** (7.948)		-15.57** (6.836)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicality)		-12.12** (5.769)		-15.86** (6.970)		-16.30** (7.653)
Hansen J. Stat	3.321	3.220	2.365	2.428	1.361	1.475
<i>p. value</i>	0.506	0.522	0.669	0.658	0.851	0.831
Observations	483	483	529	529	486	486
R-squared	0.135	0.135	0.076	0.077	0.099	0.101

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Fiscal Balance to (resp. potential) GDP Counter-Cyclicality is the coefficient of the output gap when primary fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Set of instruments: Legal origin (English, French, German, Scandinavian), District Magnitude, Federal Political System, Government Centralization. All instruments are beginning of period values. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and sector dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (res

Table 1a-7

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.868*** (0.259)	-0.897*** (0.254)	-0.558 (0.407)	-0.587 (0.405)	-1.001** (0.458)	-0.987** (0.455)
Interaction (Positive Financial Dependence and Gov. Revenues to GDP Counter-Cyclical)	10.91*** (2.447)		10.54*** (2.462)		6.780** (2.797)	
Interaction (Negative Financial Dependence and Gov. Revenues to GDP Counter-Cyclical)	-4.423 (4.357)		-9.954 (7.474)		-20.37*** (6.108)	
Interaction (Positive Financial Dependence and Gov. Expenditures to GDP Pro-Cyclical)	-10.56*** (2.882)		-9.873*** (2.243)		-12.99*** (2.699)	
Interaction (Negative Financial Dependence and Gov. Expenditures to GDP Pro-Cyclical)	9.073 (6.815)		11.21 (6.401)		19.20** (8.942)	
Interaction (Positive Financial Dependence and Gov. Revenues to pot. GDP Counter-Cyclical)		10.90*** (2.333)		10.22*** (2.186)		6.967** (3.001)
Interaction (Negative Financial Dependence and Gov. Revenues to pot. GDP Counter-Cyclical)		-4.854 (4.350)		-8.256 (6.166)		-19.49*** (6.065)
Interaction (Positive Financial Dependence and Gov. Expenditures to pot. GDP Pro-Cyclical)		-10.84*** (2.909)		-9.999*** (2.058)		-12.58*** (2.666)
Interaction (Negative Financial Dependence and Gov. Expenditures to pot. GDP Pro-Cyclical)		10.32 (6.886)		11.95* (6.309)		19.54** (7.407)
Observations	521	521	523	523	593	593
R-squared	0.582	0.582	0.544	0.544	0.510	0.510

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Gov. Revenues to GDP (resp. pot. GDP) Counter-Cyclical is the coefficient of the output gap when total government revenues to GDP (resp. pot. GDP) is regressed on a constant and the output gap for each country. Gov. Expenditures to GDP (resp. pot. GDP) Pro-Cyclical is the coefficient of the output gap when total government expenditures to GDP (resp. pot. GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors - clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (re

Table 1b-7

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.534 (0.375)	-0.526 (0.376)	-0.0936 (0.494)	-0.0797 (0.499)	-0.491 (0.488)	-0.492 (0.488)
Interaction (Asset Tangibility and Total Gov. Revenues to Potential GDP Counter-cyclicality)	-19.22*** (5.951)		-17.31** (6.192)		-13.17* (7.506)	
Interaction (Asset Tangibility and Total Gov. Expenditures to Potential GDP Pro-cyclicality)	19.46** (7.643)		18.44*** (5.377)		17.72** (6.598)	
Interaction (Asset Tangibility and Total Gov. Revenues to GDP Counter-cyclicality)		-19.40*** (6.135)		-18.26** (6.806)		-12.81* (7.038)
Interaction (Asset Tangibility and Total Gov. Expenditures to GDP Pro-cyclicality)		18.80** (7.290)		17.82*** (5.635)		18.23** (6.541)
Observations	521	521	523	523	593	593
R-squared	0.553	0.553	0.514	0.514	0.472	0.472

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Government Revenues (resp. Expenditures) to potential GDP Counter-Cyclicality is the coefficient of the output gap when total government revenues (resp. expenditures) to potential GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-7

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.601*** (0.411)	-2.603*** (0.419)	-2.599*** (0.402)	-2.620*** (0.393)	-2.604*** (0.375)	-2.612*** (0.383)
Interaction (Positive Financial Dependence and Gov. Revenues to pot. GDP Counter-Cyclical)	8.762*** (1.205)		10.18*** (2.016)		7.480*** (2.234)	
Interaction (Negative Financial Dependence and Gov. Revenues to pot. GDP Counter-Cyclical)	-18.12* (8.561)		-25.76** (9.262)		-28.80*** (4.601)	
Interaction (Positive Financial Dependence and Gov. Expenditures to pot. GDP Pro-Cyclical)	-7.753*** (1.628)		-7.621*** (1.905)		-9.697*** (1.822)	
Interaction (Negative Financial Dependence and Gov. Expenditures to pot. GDP Pro-Cyclical)	19.17* (9.435)		22.09** (8.254)		28.56*** (6.493)	
Interaction (Positive Financial Dependence and Gov. Revenues to GDP Counter-Cyclical)		8.927*** (1.288)		10.61*** (2.328)		7.079*** (2.185)
Interaction (Negative Financial Dependence and Gov. Revenues to GDP Counter-Cyclical)		-18.14* (8.895)		-29.14** (10.88)		-30.09*** (5.456)
Interaction (Positive Financial Dependence and Gov. Expenditures to GDP Pro-Cyclical)		-7.728*** (1.571)		-7.687*** (1.805)		-10.40*** (1.959)
Interaction (Negative Financial Dependence and Gov. Expenditures to GDP Pro-Cyclical)		17.38* (9.004)		21.31** (7.821)		28.05*** (7.587)
Observations	516	516	518	518	583	583
R-squared	0.566	0.566	0.507	0.507	0.463	0.463

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Total Government Revenues (resp. expenditures) to GDP Counter-Cyclical is the coefficient of the output gap when total government revenues (resp. expenditures) to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-7

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.558*** (0.472)	-2.555*** (0.468)	-2.449*** (0.489)	-2.447*** (0.486)	-2.283*** (0.489)	-2.273*** (0.489)
Interaction (Asset Tangibility and Total Government Expenditures to GDP Pro-Cyclicality)	16.99*** (4.236)		17.66*** (4.486)		17.96*** (4.908)	
Interaction (Asset Tangibility and Total Government Revenues to GDP Counter-Cyclicality)	-16.49*** (5.022)		-18.88*** (6.277)		-15.50** (6.065)	
Interaction (Asset Tangibility and Total Government Expenditures to potential GDP Pro-Cyclicality)		17.22*** (4.325)		17.76*** (4.747)		16.47*** (4.956)
Interaction (Asset Tangibility and Total Government Revenues to potential GDP Counter-Cyclicality)		-16.33*** (4.848)		-18.13*** (5.592)		-16.62** (6.320)
Observations	516	516	518	518	583	583
R-squared	0.541	0.543	0.468	0.472	0.417	0.417

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Total Government Revenues to GDP (resp. pot. GDP) Counter-Cyclicality is the coefficient of the output gap when total government revenues to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. Total Government Expenditures to GDP (resp. potential GDP) Pro-Cyclicality is the coefficient of the output gap when total government expenditures to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies

Table 1a-8

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.956*** (0.247)	-0.974*** (0.239)	-0.603 (0.417)	-0.619 (0.402)	-0.899* (0.434)	-0.859* (0.436)
Interaction (Positive Financial Dependence and Primary Gov. Revenues to GDP Counter-Cyclical)	5.877*** (1.301)		5.661** (2.209)		2.573 (2.495)	
Interaction (Negative Financial Dependence and Primary Gov. Revenues to GDP Counter-Cyclical)	0.217 (1.763)		-3.053 (6.585)		-18.87** (6.558)	
Interaction (Positive Financial Dependence and Primary Gov. Expenditures to GDP Pro-Cyclical)	-10.37*** (2.350)		-10.18*** (1.941)		-11.83*** (1.686)	
Interaction (Negative Financial Dependence and Primary Gov. Expenditures to GDP Pro-Cyclical)	8.861 (6.578)		9.607 (6.001)		9.315 (9.050)	
Interaction (Positive Financial Dependence and Primary Gov. Revenues to pot. GDP Counter-Cyclical)		6.101*** (1.152)		5.364*** (1.715)		3.060 (2.619)
Interaction (Negative Financial Dependence and Primary Gov. Revenues to pot. GDP Counter-Cyclical)		-0.0762 (1.380)		-0.888 (5.634)		-16.97** (6.810)
Interaction (Positive Financial Dependence and Primary Gov. Expenditures to pot. GDP Pro-Cyclical)		-11.42*** (2.671)		-10.88*** (1.971)		-11.64*** (1.883)
Interaction (Negative Financial Dependence and Primary Gov. Expenditures to pot. GDP Pro-Cyclical)		11.59 (7.159)		12.01* (6.392)		11.40 (8.310)
Observations	521	521	523	523	572	572
R-squared	0.586	0.589	0.550	0.553	0.532	0.530

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Primary Gov. Revenues to GDP (resp. pot. GDP) Counter-Cyclical is the coefficient of the output gap when primary government revenues to GDP (resp. pot. GDP) is regressed on a constant and the output gap for each country. Primary Gov. Expenditures to GDP (resp. pot. GDP) Pro-Cyclical is the coefficient of the output gap when primary government expenditures to GDP (resp. pot. GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -cluste

Table 1b-8

Dependent variable: Real Value Added Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing Value Added	-0.555 (0.372)	-0.543 (0.374)	-0.119 (0.490)	-0.0996 (0.502)	-0.258 (0.468)	-0.259 (0.465)
Interaction (Asset Tangibility and Primary Gov. Revenues to potential GDP Counter-cyclical)	-10.24** (3.817)		-7.717 (4.677)		-7.917 (8.282)	
Interaction (Asset Tangibility and Primary Gov. Expenditures to potential GDP Pro-cyclical)	19.99** (6.729)		20.46*** (5.202)		15.38** (5.867)	
Interaction (Asset Tangibility and Primary Gov. Revenues to GDP Counter-cyclical)		-9.999** (4.116)		-8.876 (6.090)		-7.347 (7.875)
Interaction (Asset Tangibility and Primary Gov. Expenditures to GDP Pro-cyclical)		17.49*** (5.707)		18.21*** (5.093)		15.28** (5.427)
Observations	521	521	523	523	572	572
R-squared	0.554	0.553	0.517	0.515	0.488	0.488

Note: The dependent variable is the average annual growth rate in real value added for the period indicated in each column for each industry in each country. Initial Share in Manufacturing Value Added is the ratio of beginning of period industry real value added to beginning of period total manufacturing real value added. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Government Revenues (resp. Expenditures) to GDP Counter-Cyclical is the coefficient of the output gap when primary government revenues (resp. expenditures) to GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors - clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2a-8

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.566*** (0.426)	-2.563*** (0.448)	-2.470*** (0.423)	-2.484*** (0.414)	-2.542*** (0.399)	-2.529*** (0.406)
Interaction (Positive Financial Dependence and Primary Gov. Revenues to pot. GDP Counter-Cyclical)	5.113*** (0.616)		6.509*** (1.487)		4.564** (1.686)	
Interaction (Negative Financial Dependence and Primary Gov. Revenues to pot. GDP Counter-Cyclical)	-8.227** (3.653)		-11.89* (6.416)		-21.20*** (6.459)	
Interaction (Positive Financial Dependence and Primary Gov. Expenditures to pot. GDP Pro-Cyclical)	-7.667*** (1.937)		-7.958*** (2.115)		-9.306*** (1.097)	
Interaction (Negative Financial Dependence and Primary Gov. Expenditures to pot. GDP Pro-Cyclical)	20.33* (9.755)		19.63** (8.435)		22.09** (8.496)	
Interaction (Positive Financial Dependence and Primary Gov. Revenues to GDP Counter-Cyclical)		5.024*** (0.725)		6.915*** (1.827)		3.917** (1.420)
Interaction (Negative Financial Dependence and Primary Gov. Revenues to GDP Counter-Cyclical)		-8.327** (3.782)		-16.05** (7.034)		-23.79*** (7.211)
Interaction (Positive Financial Dependence and Primary Gov. Expenditures to GDP Pro-Cyclical)		-7.086*** (1.699)		-7.529*** (1.724)		-9.675*** (1.127)
Interaction (Negative Financial Dependence and Primary Gov. Expenditures to GDP Pro-Cyclical)		16.26* (8.418)		16.37** (7.365)		19.41* (9.255)
Observations	516	516	518	518	562	562
R-squared	0.567	0.565	0.508	0.507	0.474	0.478

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of beginning of period industry labor productivity to beginning of period total manufacturing labor productivity. Positive (resp. Negative) Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990 when this fraction is positive (resp. negative) and is zero otherwise. Primary Government Revenues (resp. Expenditures) to potential GDP Counter-Cyclical is the coefficient of the output gap when primary government revenues (resp. expenditures) to potential GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies. Significance at the 1% (resp. 5%; 10%) level is indicated by *** (resp. **, *).

Table 2b-8

Dependent variable: Labour Productivity Growth						
Estimation Period	1980-2005		1985-2005		1990-2005	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Relative Labor Productivity	-2.542*** (0.484)	-2.534*** (0.477)	-2.414*** (0.482)	-2.402*** (0.485)	-2.252*** (0.505)	-2.245*** (0.504)
Interaction (Asset Tangibility and Primary Government Revenues to GDP Counter-Cyclical)	-7.885** (2.998)		-9.642** (4.035)		-9.865* (5.535)	
Interaction (Asset Tangibility and Primary Government Expenditures to GDP Pro-Cyclical)	15.52*** (3.940)		17.80*** (3.786)		16.16*** (4.224)	
Interaction (Asset Tangibility and Primary Government Revenues to potential GDP Counter-Cyclical)		-8.294** (2.925)		-9.013** (3.240)		-11.43* (6.138)
Interaction (Asset Tangibility and Primary Government Expenditures to potential GDP Pro-Cyclical)		17.26*** (4.270)		19.39*** (4.649)		15.38*** (4.545)
Observations	516	516	518	518	562	562
R-squared	0.542	0.544	0.474	0.476	0.426	0.426

Note: The dependent variable is the average annual growth rate in labor productivity for the period indicated in each column for each industry in each country. Initial Relative Labor Productivity is the ratio of industry beginning of period labor productivity to total manufacturing beginning of period labor productivity. Asset Tangibility is the fraction of assets represented by net property, plant and equipment for US firms in the same industry for the period 1980-1990. Primary Government Revenues to GDP (resp. pot. GDP) Counter-Cyclical is the coefficient of the output gap when primary government revenues to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. Primary Government Expenditures to GDP (resp. potential GDP) Pro-Cyclical is the coefficient of the output gap when primary government expenditures to GDP (resp. potential GDP) is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses. Estimated coefficients are in percentage. Standard errors -clustered at the country level- are in parentheses. All estimations include country and industry dummies.

Table R&D

Dependent variable: R&D Spending Growth						
Estimation Period: 1987-2005	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Log of Initial Share in Manufacturing R&D spending	-0.393*** (0.0737)	-0.393*** (0.0736)	-0.387*** (0.0888)	-0.385*** (0.0883)	-0.384*** (0.0887)	-0.380*** (0.0881)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclical)	1.236** (0.600)					
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclical)		1.301** (0.602)				
Interaction (Financial Dependence and Total Gov. Expenditures to GDP Pro-Cyclical)			-1.601** (0.549)			
Interaction (Financial Dependence and Total Gov. Revenues to GDP Counter-Cyclical)			0.665 (0.626)			
Interaction (Financial Dependence and Total Gov. Expenditures to potential GDP Pro-Cyclical)				-1.887*** (0.445)		
Interaction (Financial Dependence and Total Gov. Revenues to potential GDP Pro-Cyclical)				0.0140 (0.447)		
Interaction (Financial Dependence and Primary Gov. Expenditures to GDP Pro-Cyclical)					-1.733** (0.574)	
Interaction (Financial Dependence and Primary Gov. Revenues to GDP Counter-Cyclical)					0.817 (0.544)	
Interaction (Financial Dependence and Primary Gov. Expenditures to potential GDP Pro-Cyclical)						-2.013*** (0.561)
Interaction (Financial Dependence and Primary Gov. Revenues to potential GDP Counter-Cyclical)						0.148 (0.483)
Observations	258	258	258	258	258	258
R-squared	0.487	0.488	0.487	0.488	0.492	0.491

Note: The dependent variable is the average annual growth rate in R&D spending for the period 1987-2005 for each industry in each country. Initial Share in Manufacturing R&D spending is the ratio of beginning of period R&D spending at the industry level to total manufacturing beginning of period R&D spending. Financial Dependence is the fraction of capital expenditures not financed with internal funds for US firms in the same industry for the period 1980-1990. Total Fiscal Balance to (resp. potential) GDP Counter-Cyclical is the coefficient of the output gap when total fiscal balance to (resp. potential) GDP is regressed on a constant and the output gap for each country. Total (resp. Primary) Gov. Expenditures to (resp. potential) GDP Pro-Cyclical is the coefficient of the output gap when total (resp. primary) government expenditures to (resp. potential) GDP is regressed on a constant and the output gap for each country. Total (resp. Primary) Gov. Revenues to (resp. potential) GDP Counter-Cyclical is the coefficient of the output gap when total (resp. primary) government revenues to (resp. potential) GDP is regressed on a constant and the output gap for each country. The interaction variable is the product of variables in parentheses.